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ARTICLE

Empirical Research on the Influence of Marine High-end Human Resources on Marine Knowledge Innovation——With Organizational Incentive and Technological Innovation as Mediating Variable

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ABSTRACT

The main purpose of this paper is to explore the intermediary role of policy incentives and marine technological innovation in marine high-end human capital promoting marine knowledge innovation. Previous studies on the impact of marine high-end human capital on marine knowledge innovation mainly focused on the direct impact of marine high-end human capital on marine knowledge innovation, while ignoring the role of intermediary variables. Based on 512 sample survey data from 138 organizations in 16 coastal cities of China, this paper uses structural equation model to examine the relationship between high-end human capital and policy incentives, technological innovation and marine knowledge innovation. The research shows that marine high-end human capital has an impact on marine knowledge innovation through policy incentives and marine technology innovation. Policy incentives and marine technology innovation play a full intermediary role in the relationship between marine high-end human capital and marine knowledge innovation.

1. Introduction

This paper analyses the impact of Marine High-end Human Resources on Marine Knowledge Innovation, and then identifies how Organizational Incentive and Technological Innovation affect the relationship between Marine High-end Human Resources and Marine Knowledge Innovation. Marine high-end human resources include marine scientific research and education personnel, marine related industries and professional technicians, marine economic management service personnel (Qianbin Di et al., 2018)[1]. National marine departments should participate more in the training of marine talents and the popularization of marine education nationwide, so as to raise marine education to the height of space education (Pew Oceans Commission,2005). Marine knowledge innovation is the primary driving force for the development of marine economy, the endogenous factor for the survival and competitiveness of marine economy. Marine knowledge innovation can't be separated from marine high-end

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marine talents. Marine human capital is the key element of marine knowledge innovation. Human capital plays an important role in economic growth, and successively puts forward the endogenous role model of economic growth (Sollow, 1957; Arrow, 1962; Romer, 1986)[2-4]. The cooperation consciousness and interdependence behavior of high-end talents can improve the effectiveness of innovation strategy implementation (Schuler, 1989)[5]. The value of marine high-end human capital in marine knowledge innovation and in promoting marine economic development are increasing day by day. Marine high-end human capital becomes the promoter of marine knowledge innovation. Therefore, it is of great significance to study the impact of marine high-end human capital on marine knowledge innovation.

Through in-depth analysis and empirical research, this paper deeply explores the impact of marine high-end human capital on knowledge innovation on the basis of summarizing the literature. The research on the relationship between marine high-end human capital and marine knowledge innovation by scholars at home and abroad is basically based on theoretical analysis, with few empirical studies. It is not clear which path marine high-end human capital will take to promote marine knowledge innovation. It is necessary to further explore whether marine high-end human capital directly affects marine knowledge innovation or mediates marine knowledge innovation.

2. Relevant Theoretical Basis and Research Hypothesis

2.1 Marine High-End Human Capital and Technological Innovation

The definition of human capital is given in terms of human quality, economics, access to ability and practical value (Schultz, 1960)[6]. The concept of technological innovation can be traced back to the definition of technological innovation by Austrian economist Schumpeter in The Theory of Economic Development (Schumpeter, 1912). The role of human capital in technological innovation and diffusion is studied by means of "technological potential" and "technological potential difference" (Jinying Wang, 2000). The investment expenditure of human capital is directly proportional to the dynamic innovation ability of the organization (Yong Yang Di et al., 2007). In the final analysis, the competition of marine economy is the competition of marine high-end marine human capital. Marine high-end human capital gains value appreciation through education and training. If the investment of marine high-end human capital is insufficient, the bottleneck of marine knowledge innovation will be formed (Pew Oceans Commission, 2003; Maica Garriga, 2010; Natalie K. Bown, 2013)[7]. By analyzing the role of entrepreneurs and core technicians in technological innovation, it is concluded that human capital is the key element of technological innovation (Xiaobin Wang, 2000)[8]. Marine core technicians are not only the source of marine technological innovation, but also the carrier of marine technological innovation. The enthusiasm and effective allocation of marine technological R&D personnel are the premise and guarantee of improving marine technological innovation (Meihua Qiao, 2018). Based on the above theories, the first hypothesis of this paper is proposed.

Hypothesis H1: Marine high-end human capital is positively correlated with marine technological innovation.

2.2 Marine High-end Human Capital and Policy Incentives

Studies at home and abroad show that marine high-end human capital is closely related to policy incentives. Demand Hierarchy Theory (Maslow, 1943), Two-Factor Theory (Herzberg, 1958) And Expectation Theory (Vroom, 1964) have demonstrated from different perspectives that people play a positive role in promoting policy incentives in the process of realizing their own values. Accumulation of marine high-end human capital is conducive to policy incentives. According to different needs of marine high-end human capital, different policy incentives can be adopted to realize "the potential of marine high-end human capital"(Hongliang Qi, 2003; Chaminade et al.,2008; Xiaowei Chen, 2013)[9]. Marine high-end human capital is the core resource that can't be imitated to promote the development of marine economy. Different policy incentives should be adopted to fulfill the desire of self-realization of marine high-end human capital. Appropriate policy incentives can improve the personal quality of personnel and the ability of marine knowledge innovation (Robert Blasiak et al., 2015; Kostadinov Ivaylo et al., 2011; Nicole Schaefer, 2011). Policy incentive should adopt different incentive modes according to the demand level of marine high-end talents and different stages of marine economic development, and adopt different policy incentive modes with different environments, so as to achieve the best incentive effect (Ping Liu et al., 2003). To improve the enthusiasm and initiative of marine high-end innovators, a scientific and rational human capital incentive system should be established (Xianxiang Kong, 2007). Based on the above theories, the second hypothesis of this paper is proposed.

Hypothesis H2: Marine high-end human capital is positively correlated with policy incentives.

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2.3 Marine High-end Human Capital and Marine Knowledge Innovation

Regional concentration and industrial cluster can promote the reserve and accumulation of human capital stock. Through formal and informal learning and communication, high-level personnel can make knowledge flow and spread freely, which is conducive to knowledge spillover and knowledge innovation (Hirschman, 1958; Myrdal, 1957; Milton Friedman, 1999 Maria,2010 et al.) [10]. Concentration of marine high-end human capital can accelerate knowledge diffusion. When marine high-end human capital is completely dispersed, the cost of marine knowledge acquisition increases, which is not conducive to marine knowledge innovation (Ning Hui, 2007; Chunsheng Zhao, 2017)[11]. Marine high-end human capital is the carrier of marine knowledge. The competition of marine knowledge is essentially the competition of marine high-end human capital. Technical talents with rich marine knowledge are the main force of marine knowledge innovation and marine knowledge reconstruction (Bing Wang et al., 1999). The marine knowledge consortium composed of marine knowledge workers is the carrier of marine knowledge innovation. The quality and quantity of marine knowledge innovation depend on the stock of marine high-end human capital (Liangrong Song et al., 2001). In the marine high-end human capital, the marine knowledge previously mastered by the individual is conducive to absorbing similar new knowledge. The knowledge mastered by the individual reaches a certain level, which can quickly complete the exchange, absorption and integration of new and old knowledge, and improve the ability of marine knowledge innovation (Jin Tian, 2003). Based on the above theories, the third hypothesis of this paper is proposed.

Hypothesis H3: Marine high-end human capital is positively correlated with marine knowledge innovation.

2.4 Policy Incentives and Marine Knowledge Innovation

Policy incentives can be divided into individual incentives and group incentives. Through potential incentive, institutional incentive, psychological incentive and benefit incentive strategies to stimulate the enthusiasm and initiative of marine high-end talent work. Policy incentive can optimize the incentive structure of marine knowledge innovation and improve the ability of marine knowledge innovation (Liqun Sun, 2010; Sheng Xu et al., 2018)[12]. In the process of realizing marine knowledge innovation, policy incentives can effectively stimulate the potential of marine high-end talents, stimulate the enthusiasm of knowledge workers through incentive mechanisms such as salary, knowledge capitalization and career development, and ensure the continuity of marine knowledge innovation activities (Le Yu, 2016). Policies can give innovative vigor and rights to the subjects of marine knowledge innovation, enhance their motivation of knowledge innovation and enhance their ability of knowledge innovation through four aspects: interest incentive, ability incentive, right incentive and responsibility incentive (Zhe Wu, 2003). By establishing interest-driven incentive mechanism, administrative order-driven incentive mechanism, corporate culture-sharing incentive mechanism, knowledge alliance incentive mechanism and benchmark management incentive mechanism, knowledge innovation ability of marine high-end talents can be stimulated (Ailin Wang, 2001). Based on the above theories, the fourth hypothesis of this paper is proposed.

Hypothesis H4: Policy incentive is positively correlated with marine knowledge innovation.

2.5 Marine Technological Innovation and Marine Knowledge Innovation

Knowledge is divided into expressive knowledge and concealed knowledge (Polanyi, 1962)[13]. Because of its complexity, specificity, ambiguity and difficulty to express, marine knowledge has become the core competitiveness of marine economic innovation (Xingwu Cui, 2018). It is technology that knowledge is systematically applied to production and meets market demand through production process and service process (Holsapple C W and Singh M., 2001)[14]. Any marine technology is the manifestation of marine knowledge. Marine technological innovation is conducive to marine knowledge innovation. Marine knowledge innovation pays attention to the progress of marine economy, while marine technology innovation pays more attention to the commercial benefits brought to the marine economy (Jitao Guo, 2018). Marine technological innovation is the carrier, concretization and core content of marine knowledge innovation. Marine knowledge innovation depends on marine technological innovation (Lizhen Liu, 2018). Marine knowledge innovation not only exists in the source of marine technology innovation, but also runs through every link in the process of marine technology innovation. Marine technology innovation provides a new tool for marine knowledge innovation, opens up a new scope for the development of marine knowledge innovation, influences the development and direction of marine knowledge innovation, and provides support for marine knowledge innovation (Hongmei Hao, 2015)[15]. Based on the above theories, the fifth hypothesis of this paper is proposed.

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Hypothesis H5: There is a positive correlation between marine technological innovation and marine knowledge innovation.

2.6 The Mediating Role of Policy Incentives and Marine Technological Innovation

On the one hand, marine high-end human capital has a positive correlation with marine knowledge innovation, which indicates that marine high-end human capital has a direct effect on marine knowledge innovation. On the other hand, marine high-end human capital is positively correlated with policy incentives and marine technological innovation, while policy incentives and marine technological innovation are positively correlated with marine knowledge innovation. Policy incentives and marine technological innovation can improve the stock and accumulation of marine high-end human capital, thus conducive to marine knowledge innovation. It shows that marine high-end human capital has an indirect impact on marine knowledge innovation through policy incentives and marine technological innovation. Policy incentives and marine technological innovation play an intermediary role. Based on the above analysis, the following hypothesis are put forward.

Hypothesis H6: Policy incentive plays an intermediary role in the relationship between marine high-end human capital and marine knowledge innovation.

Hypothesis H7: Marine technological innovation plays an intermediary role in the relationship between marine high-end human capital and marine knowledge innovation.

Based on previous research theories, the conceptual model and hypothesis of this study are established (Figure 1).

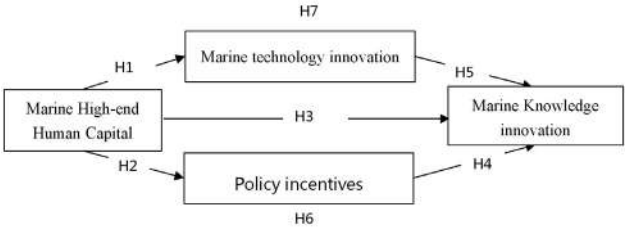

Figure 1. Conceptual model and research hypothesis

3. Research Methods

3.1 Sample Data

The survey data are from China's Coastal Cities of Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Wenzhou, Fuzhou, Xiamen, Shantou, Shenzhen, Zhuhai, Zhanjiang and Beihai. The scope of the survey included traditional manufacturing industry, scientific research institutions, small and medium-sized innovation enterprises, large-scale science and technology enterprises, government, science and technology bureau. The respondents were mainly middle and senior managers and technological innovators. By means of target sample and random sampling, a total of 138 organizations were involved. 617 questionnaires were sent out and 530 questionnaires were recovered. After deducting 18 questionnaires with incomplete or incomplete answers, 512 valid questionnaires were received, with an effective recovery rate of 83%. The questionnaire was conducted by 5-Likert scale. The way of investigation is to let the respondents evaluate themselves. In order to avoid consistency errors in answering questions due to fixed thinking patterns, some items were set in reverse way during the survey (Salancik and Pfefer, 1977). Because all items of the questionnaire are filled by the same person, homologous deviation is easy to occur, so Haman single factor test is used (Podsakoff and Organ, 1996). Factor analysis of all items in the questionnaire shows that the load of the first principal component without rotation is 37.26%. The relatively low single factor explanatory scale shows that the homology deviation is not serious. At the same time, according to the descriptive statistics of variables and the correlation coefficient matrix (Table 1), the covariance is less than 0.80, indicating that there is no multiple collinearity among factors (Haman, 1995).

Table 1. Variable descriptive statistics and correlation matrix

	Mean	Variance	1	2	3
Marine High-end Human Capital	3.58	0.56			
Policy incentives	3.86	0.51	0.233**		
Marine technology innovation	3.80	0.65	0.391**	0.216*	
Marine Knowledge innovation	3.33	0.59	0.377**	0.425**	0.315**
Note: **to express P<0.01, *to express P<0.05(Two-Tailed Test), N=277					

3.2 Variable Measurement

This paper uses SPSS 22.0 to test the reliability of the internal consistency coefficient Cronbach's alpha of the total scale and sub-scale. Because the measurement items used in the research are from the previous research literature, and samples have been sampled for questionnaire testing before the formulation of the questionnaire, which deletes unreasonable options and adds reasonable options. After many times of "test-analysis-add-delete options" process, the total scale and the measurement items of each subscale

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are finally determined, so the questionnaire has a high content validity. Considering that regional economic and cultural differences may have an impact on the validity of the questionnaire structure, the validity of the scales was evaluated by structural equation model (SEM) confirmatory factor analysis (CFA) using LISREL 8.7 statistical tool.

Marine high-end human capital. The scale consists of 10 items (Adam Smith and Schultz, 1960; Yixue Huang 2015; Jinghuai Hou 2017)[16]. The scale includes three dimensions: marine knowledge capital (3 items), marine skills capital (3 items), learning ability and innovative spiritual capital (4 items). The Cronbach's alpha values of the three dimensions subscales are 0.81, 0.83 and 0.80, respectively. The Cronbach's alpha value of the total marine high-end human capital scale is 0.83. The reliability coefficients of the total scale and the subscale are all over the critical value of 0.70, which indicates that the scales have good reliability. The fitness indices of confirmatory factor analysis of marine high-end human capital scale are: $\frac{x^2}{df} = 2.213$, $P < 0.05$, NFI=0.935, IFI=0.959, TLI=0.932, CFI=0.963, RMSEA=0.090. The results show that the marine high-end human capital scale has good structural validity.

Knowledge innovation. In this paper, the scale of marine knowledge innovation adopts the process of continuous socialization, externalization, integration and internalization in the process of knowledge diffusion. Socialization refers to knowledge from recessive to recessive, sharing experience to achieve innovative knowledge. Externalization refers to knowledge from recessive to dominant, and combination refers to knowledge from dominant to dominant, forming systematic knowledge. Internalization refers to the change of knowledge from dominance to recessive (Nonaka I and Takecuchi H., 1995)[17]. There were 13 items in the scale, including 3 items of socialization, 3 items of externalization, 3 items of combination and 4 items of internalization. The Cronbach's alpha values of the four dimensions subscales are 0.72, 0.82, 0.85 and 0.76, respectively. The Cronbach's alpha values of the total scale of marine knowledge innovation is 0.81. The reliability coefficients of the total scale and the sub-scale both exceed the critical value of 0.70, which indicates that they have good reliability. The fitness indices of confirmatory factor analysis of the Marine Knowledge Innovation Scale are: $\frac{x^2}{df} = 2.514$, $P < 0.05$, NFI=0.977, IFI=0.976, TLI=0.977, CFI=0.982, RMSEA=0.092, indicating that the Marine Knowledge Innovation Scale has good structural validity.

Policy incentives. Material incentives are more effective than other incentives (Holmstrom and Milgrom, 1991)[18]. Spiritual motivation is considered more effective by most people (Fama, 1980). Policy incentives play an important role in technological innovation (Zhiqiang Jia et al., 2003). The measurement items in this study come from the above results, and consist of 11 items, including material incentive (3 items), spiritual incentive (4 items) and institutional incentive (4 items). The Cronbach's alpha values of the three subscales are 0.82, 0.78 and 0.80, respectively, and the Cronbach's alpha value of the aggregate policy incentive scale is 0.82. The reliability coefficients of the total scale and the sub-scale both exceed the critical value of 0.70, which indicates that they have good reliability. The fitness indices of confirmatory factor analysis of the Policy Incentive Scale are: $\frac{x^2}{df} = 1.966$, $P < 0.05$, NFI=0.953, IFI=0.961, TLI=0.971, CFI=0.975, RMSEA=0.091, indicating that the policy incentive scale has good structural validity.

Marine technology innovation. The index of marine technological innovation consists of 13 measurement items, including marine technological innovation input (4 items), marine technological innovation output (3 items), and marine technological innovation effect (6 items) (Jie Lan, 2018; Fu Lv, 2017; Xinying Liu, 2007). The Cronbach's alpha values of the three dimensions subscales are 0.75, 0.81 and 0.77, respectively. The Cronbach's alpha value of the total scale of marine technological innovation is 0.79. The reliability coefficients of the total scale and the sub-scale both exceed the critical value of 0.70, which indicates that they have good reliability. The fitness indices of confirmatory factor analysis of marine technological innovation scale are: $\frac{x^2}{df} = 2.321$, $P < 0.05$, NFI=0.918, IFI=0.927, TLI=0.944, CFI=0.932, RMSEA=0.087, indicating that the scale has good structural validity.

4. Empirical Results and Analysis

In order to further confirm the conceptual relationship in the model, structural equation analysis software LISREL 8.7 is used to verify the hypothesis. The model is revised according to the path coefficient of the initial model, and the revised model is analyzed again to obtain the best data interpretation.

Initial model testing. According to the hypothesis in this paper, the path analysis of the initial model is carried out by using the analysis software, and the path coefficients of the model are obtained (Figure 2). According to the test results, the following conclusions can be drawn:

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in the model hypothesis, Hypothesis H1 is supported, it shows that marine high-end human capital can promote marine technological innovation. Hypothesis H2 is supported, it shows that marine high-end human capital can promote the construction of policy incentive mechanism. hypothesis H3 is not supported, the direct effect of marine high-end human capital on marine knowledge innovation is not significant. Hypothesis H4 is supported, it shows that policy incentives can promote marine knowledge innovation. Hypothesis H5 is supported, it shows that marine technological innovation is beneficial to marine knowledge innovation. Hypothesis H6 is supported, it shows that policy incentives play a mediating role in marine high-end human capital and marine knowledge innovation. Hypothesis H7 is supported, it shows that marine technological innovation plays a mediating role in marine high-end human capital and marine knowledge innovation.

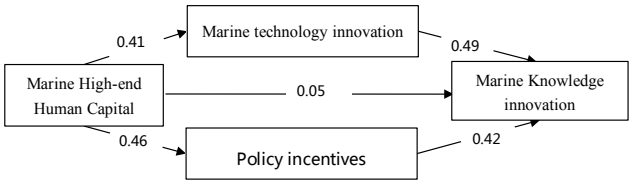

Figure 2. Intermediary model of marine high-end human capital and marine knowledge innovation

Initial model updating and path analysis. If the direct role of independent variable and dependent variable changes to zero after the intermediate variable is added, the intermediate variable plays the role of complete mediation (Baron and Kenny, 1996). In this study, the path coefficients of dependent variables and independent variables are 0.05, close to 0, and the P value is not significant when the intermediate variables are added to the model. Therefore, we can consider the full mediating role of policy incentives and marine technological innovation to modify the model. The revised model is shown in Figure 3. Through path analysis and comparison with model 2, it is found that the fitting effect of complete mediation model is slightly better than that of partial mediation model (Table 2). In order to further analyze the importance of policy incentives and marine technological innovation in marine high-end human capital and marine knowledge innovation, we can compare the path coefficients of marine high-end human capital and policy incentives, policy incentives and marine knowledge innovation with those of marine high-end human capital and marine technology innovation, marine technology innovation and marine knowledge innovation. The coefficient of influence with marine technology innovation as intermediary variable (0.41 x 0.50) is slightly larger than that with policy incentive as intermediary variable (0.46 x 0.43). This shows that marine high-end human capital is more likely to realize marine knowledge innovation through marine technology innovation as intermediary variable.

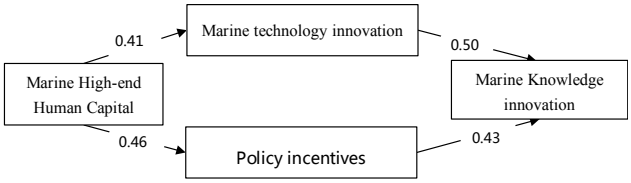

Figure 3. Complete mediation model of high-end human capital and marine knowledge innovation

Table 2. Comparison of fitting degree using structural equation model

Model	x^2/df	NFI	IFI	TLI	CFI	RMSEA
Model I	2.225	0.933	0.935	0.929	0.933	0.092
Model II	2.217	0.931	0.936	0.928	0.931	0.091
Critical value	3	0.9	0.9	0.9	0.9	0.1

5. Research Conclusions and Future Research Directions

This paper uses empirical research methods to test the mediating role of policy incentives and marine technology innovation in marine high-end human capital and marine knowledge innovation. Through factor analysis and path analysis, the following conclusions are drawn. First, marine high-end human capital has a positive impact on policy incentives. At the same time, policy incentives have a positive impact on marine knowledge innovation. Marine high-end human capital has a positive impact on marine knowledge innovation through the intermediary role of policy incentives. The direct impact of marine high-end human capital on marine knowledge innovation is not significant, and Marine high-end human capital has a positive impact on marine knowledge innovation through the intermediary role of policy incentives. Secondly, marine high-end human capital has a positive impact on marine technological innovation. At the same time, marine technological innovation has a positive impact on marine knowledge innovation. Marine high-end human capital has a positive impact on marine knowledge innovation through the intermediary role of marine technological innovation. Thirdly, policy incentives and marine technological innovation play a full intermediary role between marine high-end human capital and marine knowledge innovation. Marine high-end human capital can promote

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marine knowledge innovation through two ways. One way is that the government can adopt the combination of material incentive, spiritual incentive and institutional incentive to promote marine knowledge innovation. Another way is to increase investment in marine technological innovation and promote marine knowledge innovation through the intermediary role of marine technological innovation.

Although some new viewpoints put forward in this paper, there are still some limitations. Firstly, because the research data come from the respondents, the validity of the research is affected to some extent by the way of overall sampling and single-question answer. Future research can collect data from multiple levels and multiple channels. Secondly, due to the difficulty of data collection and the influence of time, the data come from cross-sectional data in the same period. Future research can try to use time series data to study the interaction between variables.

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ARTICLE

Research on the Comprehensive Evaluation of Low Carbon Economic Development in Shandong Province Based on the Weighted Gra-topsis Method

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ABSTRACT

This paper starts from the analysis of the connotation of low-carbon economy, and establishes the evaluation index system of regional low-carbon economic development level. The main research content is to determine the index weight, judge the correlation degree and sort the decision-making units by entropy method, grey correlation analysis and TOPSIS method, and finally make a comprehensive evaluation of the low-carbon economic development level of Shandong Province. The conclusion shows that the development level of low-carbon economy in Shandong Province shows a good trend year by year, but the consumption dependence on high energy consumption resources and backward ecological benefits are increasingly becoming the bottleneck of the development of low-carbon economy in Shandong Province.

1. Introduction

In recent years, the global climate is deteriorating, and energy supply such as oil is constantly in crisis under the influence of political, military and other factors. Under such a large international background, all countries are looking for new development opportunities. Among them, the development of low-carbon economy is one of the consensuses of governments. China has a large population, rich resources but limited per capita, so the government has always attached great importance to the choice of economic development path. In 2015, the Fifth Plenary Session of the 18th CPC Central Committee clearly proposed the low-carbon development of economy. However, from the perspective of data statistics, China's carbon emissions have been high in recent years. Therefore, it is very urgent for China's economic development to realize the low-carbon transformation and form an efficient low-carbon production mode as soon as possible.

Shandong Province is a strong coastal economic province, with a GDP of 7.27 trillion yuan in 2017, an increase of 7.4% over the previous year, accounting for 8.79% of the total GDP of the country, ranking the third among all provinces, whose economic level has an important impact on the national economic development. The rapid economic growth has increased the demand for energy. In 2016, primary energy consumption in Shandong province accounted for 8.94% of the total national consumption. This proportion is higher than the GDP of Shandong Province. The total energy production of the province in that year was 140.208 million tons of standard coal, which was close to 2.76 times of the total production. In

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the energy consumption structure of Shandong Province, coal energy has a high proportion. According to the data in 2016, the proportion of coal in the total energy consumption reached 77%, 14 percentage points higher than the national average. The high imbalance between energy supply and energy consumption makes it a strategic choice for economic development of Shandong Province to take the road of low-carbon economy under the severe background. In 2016, the 13th five-year plan of Shandong Province clearly proposed to carry out energy transformation and upgrading, taking low-carbon economic work as the strategic focus of future regional economic work.

Based on this, this paper analyzes the development of low-carbon economy in Shandong Province from the aspects of economic output, energy consumption, low-carbon technology, and then extensively investigates the key index data in its development. Through the index system, the comprehensive evaluation of its low-carbon economy level is carried out. The evaluation conclusion can provide reference for the development of low-carbon economy in Shandong Province and other coastal areas. So, what is the development status of Shandong Province's high-yield GDP and low-carbon economy? How to improve the ability of low-carbon economic development in Shandong Province? Based on the above background, this paper hopes to carry out relevant research on this issue on the basis of extensive data research.

Scholars have carried out relevant research on the development of China's low-carbon economy. Although the time is short, the research results are very rich. Through literature review, we found that the evaluation methods are generally divided into two categories: one is based on the total factor productivity theory, using DEA model-based efficiency evaluation. Wu Qi (2009) established a DEA energy efficiency evaluation model that can deal with unexpected output. The main contribution is to put environmental efficiency into the energy efficiency research framework [1]. Based on the meta frontier theory, Wu Qiaosheng (2016) incorporated the unexpected output of SO_2 emission into the DEA model, compared and analyzed the regional differences of total factor energy efficiency of urban agglomerations in the middle reaches of the Yangtze River from 2005 to 2014, and then studied the decomposition of energy inefficiency and the real and potential energy intensity[2]; Chen Xiaohong (2017) integrated the dual objectives of GDP growth and CO_2 emission control. Standard, using sbm-dea method to build a dynamic planning model, and calculate the low-carbon economic development efficiency and carbon emission reduction potential of 30 provinces in China[3]. The advantage of this method is that it is not affected by subjective factors. The disadvantage of this method is that the random interference term is regarded as an efficiency factor, which makes the reliability of the results questioned. The other is the comprehensive evaluation of low-carbon development. The steps are as follows: first, set up a low-carbon economic development target system guided by sustainable development, which should be a multi-level evaluation index system covering economy, energy, environment and other aspects. Secondly, the mathematical decision-making evaluation model is introduced to integrate different indicators, and then the evaluation results are obtained. Fu Jiafeng (2010) proposed an evaluation index system based on five dimensions of low-carbon output, low-carbon consumption, low-carbon resources, low-carbon policies and low-carbon environment, and studied the development potential[4]; Qu Xiaoe (2013) first introduced the people's living indicators in the study of the development level of low-carbon economy in Shaanxi Province, and made a horizontal comparison between the situation of Shanxi Province and the national average[5]; Li With economic development as the core, Yunyan (2016) used the fuzzy comprehensive evaluation method to process the low-carbon development indicators of domestic municipalities directly under the central government, and obtained the evaluation results and predicted the low-carbon development trend[6]. There is a deficiency in this method. The index integration in the comprehensive evaluation research needs expert opinion and has certain subjectivity.

By summarizing the previous research results and synthesizing the advantages and disadvantages of various methods, this paper adopts the comprehensive evaluation model based on Entropy Weight Grey Relation TOPSIS. The steps are as follows: first, use entropy weight method to determine the weight; second, calculate the ideal value of relevant indicators; third, use grey correlation analysis to judge the closeness; fourth, use TOPSIS analysis method to calculate the closeness of each evaluation unit to the ideal scheme; fifth, rank the evaluation units according to the front calculation. This comprehensive evaluation method avoids subjectivity and enhances the credibility of results. Make the evaluation result more scientific and reasonable.

2. Current Situation of Energy Consumption and Carbon Emission in Shandong Province

2.1 Description of the Current Situation of Energy Consumption in Shandong Province

The remarkable feature of low-carbon economy is that the energy consumption per unit output and carbon emission

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are declining[7]. As a major economic province in China, Shandong is also one of the regions with the largest energy consumption in China. In 2016, the total primary energy consumption of Shandong Province reached 387.228 million tons of standard coal, and the total terminal energy consumption reached 371.603 million tons of standard coal. Since 2011, the annual energy consumption of Shandong Province has been relatively stable, with an average annual growth rate of about 3%, which is in the forefront of the country. From the perspective of energy consumption structure, the disposable energy consumption in Shandong Province mainly includes raw coal, crude oil, natural gas, electricity, etc. Among them, raw coal accounts for the highest share of energy consumption in Shandong Province. In 2013, the share of raw coal consumption accounted for 79.74% of the total consumption, and the proportion has been maintained at about 80% since 2013. Until 2016, the proportion dropped significantly, becoming 76.87%, indicating that the relevant low-carbon measures in Shandong Province have been slightly effective, but the proportion is still much higher than the national average level. The consumption proportion of crude oil energy in Shandong Province has been relatively stable, maintained at about 16%, which was 16.27% in 2016, but the total consumption of crude oil energy is also increasing year by year. Natural gas, electric power and other renewable energy are the future energy advocated by Shandong Province. The total consumption and consumption proportion have increased year by year. The consumption proportion of natural gas has increased from 2.8% in 2011 to 3.39% in 2016, while the consumption proportion of electric power and other energy has increased from 0.1% in 2011 3to 1.87% in 2016. The change of the data reflects the policy orientation of energy consumption in Shandong Province. In the long run, with the development of solar energy technology and bio power generation technology, electric power and other renewable low-carbon energy will gradually replace the share of raw coal and crude oil in the energy consumption of Shandong Province. At the same time, Shandong Province has a high proportion of heavy industry and chemical industry in the development of industrial structure, and these industries have a very high energy consumption system; moreover, Shandong Province's economic growth and life rhythm are extremely rapid; these aspects make Shandong Province's problems of high energy consumption, high pollution and high emission more serious than other provinces[12].

2.2 The Current Situation of Carbon Emission in Shandong Province

As an authoritative organization of low-carbon economic research, the Intergovernmental Panel on climate change pointed out in its research report that the large use of fossil fuels is the main reason for the increase of carbon emissions[8]. Therefore, the calculation of carbon emissions in academic circles generally focuses on the calculation of energy consumption. In this study, the carbon emission of Shandong Province is calculated by multiplying the consumption of coal, oil and natural gas by their respective coefficients. The formula is as follows:

$$E = \sum_i E_i = \sum_i \frac{C_i}{C} * \frac{E_i}{C_i} * C = \sum_i R_i * Coe_i * C$$

In the above formula, E is represents the total carbon emission (ton); E_I represents the carbon emission (ton) of class I energy; C represents the total energy consumption (ton of standard coal); C_I represents the consumption of class I energy (ton of standard coal); R_I represents the proportion of class I energy (%); Coe_i represents the emission coefficient (ton / ton of standard coal) of class I energy, and the carbon emission coefficient given by IPCC is shown in Table 1 below.

Table 1. Emission coefficients of different energy sources (IPCC)[7]

Energy types	Raw coal	Crude oil	Natural gas	Electricity
Discharge coefficient	0.7559	0.5857	0.4483	0

Shandong Province's economic development is in the forefront of the country, industrialization, urbanization level is constantly improving. In this process, the consumption of resources is huge, environmental degradation and other issues become more and more important. Shandong Province is a province with large energy consumption and carbon emission. According to the calculation, the total carbon emission of Shandong Province increased from 25591 million tons to 310.7 million tons in 2011-2016, with an average annual growth rate of 4.28%; the per capita carbon emission increased from 1012 tons to 1.215 tons (according to the Shandong Statistical Yearbook published in 2017). In terms of energy types, coal still accounts for the majority of total carbon emissions in Shandong Province; in 2016, the total consumption of raw coal and crude oil in Shandong Province reached 93.04%, while raw coal and crude oil are recognized as high carbon emission energy[1]. Therefore, Shandong Province faces great challenges in emission reduction. Of course, although the current carbon emission of Shandong Province is quite considerable, we should also see that with the development of new energy and the wide use of new technologies, the carbon emission is greatly reduced, and

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we still have the ability to achieve the target mentioned in the 12th Five Year Plan, the carbon emission per unit GDP by 2020 is 20% lower than that in 2015[9].

3. Establish a Comprehensive Evaluation Index System and Model for Low-Carbon Economy

3.1 Comprehensive Evaluation Index System

Comprehensive and balanced consideration of low-carbon development in economy, resources, environment, technology and other aspects is the core to judge the level of low-carbon economic development in a country or region [10]. The index system should not only consider the widely accepted and used indexes in the current theory and practice, but also consider the economic development status of countries or regions, reflecting their work for the transition to a low-carbon economy. Based on the above considerations, this study establishes a comprehensive evaluation index system of low-carbon economy from three levels: target level, criterion level and index level. The target layer should reflect the idea of sustainable development and the degree of low-carbon economic development to be achieved under the guidance of the idea; the criteria layer includes four levels: low-carbon economic indicators, low-carbon energy indicators, low-carbon ecological indicators and low-carbon technical indicators; in different criteria layers, indicators are selected around their objectives, and then the specific indicators are selected by the expert group, a total of 20. The index system fully refers to the previous research conclusions, which can comprehensively reflect the intensity and trend of regional low-carbon economic development, and can also be used for the horizontal comparison of regional low-carbon development with other regions, so it has strong theoretical and practical value. (see Table 2 for relevant indicators)

3.1.1 Indicators Reflecting Low Carbon Economy

Sustainable development is the strategic goal of low-carbon economic development. This index covers six indexes: GDP per capita describes the absolute level of economic development; GDP growth describes the relative level of economic development, which measures the current situation of economic development from different perspectives; industrial structure is measured by the proportion of tertiary industry in this study to reflect the mode of economic growth; carbon productivity is measured by the output value of carbon emission per unit to reflect the efficiency of energy consumption. Urbanization index reflects people's life style; Engel coefficient is used to measure people's living affluence and represents the consumption structure of non-industrial groups.

3.1.2 Indicators Reflecting Low Carbon Energy

Energy utilization will directly affect the level of carbon emissions, so this study uses low-carbon energy indicators to measure the energy utilization of a region, and then determines the implementation effect of low-carbon economy. Specifically, it includes six indicators: the total energy consumption describes the total amount of various energy consumed by the material and non-material sectors in Shandong Province, measured in 10000 tons of standard coal; the proportion of coal consumption is listed separately because the utilization rate of coal is not high, the pollution is serious, and it is the main energy in Shandong Province; the proportion of renewable energy consumption is the relative level of zero carbon energy consumption, among which the renewable energy consumption accounts for the relative level of zero carbon energy consumption. Energy mainly refers to electric power and other energy sources; energy carbon emission coefficient reflects the difference of energy consumption structure in different regions as a whole; energy conversion rate refers to the economic output per unit energy consumption, which measures energy consumption efficiency; per capita carbon emission reflects per capita consumption of carbon emission quantity, which can more directly measure regional emission level.

3.1.3 Indicators Reflecting Low Carbon Ecology

This study used low-carbon ecological indicators to measure regional ecological quality outcomes. The indicator is measured by four small indicators: smoke (powder) dust emissions are used to measure the environmental damage of industrial pollutants. The direct result of dust pollution is that the number of haze days will increase; forest and green land are carbon absorbers and converters, with high forest coverage, indicating that the stronger the area's ability to absorb and store carbon dioxide, that is, the higher the area's carbon sink capacity; per capita afforestation area reflects the human initiative to promote the transition to a low-carbon economy initiative The higher the indicator, the more efforts are made; in the current situation of resource shortage, the recycling of industrial solid waste can take into account the dual objectives of economy and ecology. The higher the utilization rate, the greater the potential for sustainable economic development. The probability of a successful implementation of a low carbon economy is greater.

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Table 2. Evaluation index system of regional low carbon economic development

Arget layer	Criterion layer	Index layer	Code	Index Interpretation	Direction of action
Evaluation index system of regional low carbon economic development	Low carbon economic indicators	GDP per capita	A1	Yuan / person	P
		GDP growth	A2	%	P
		Industrial structure	A3	%, proportion of tertiary industry	P
		Carbon productivity	A4	10000 yuan / ton, output value per unit of carbon emission	P
		Urbanization level	A5	%, proportion of urban population	P
		Engel coefficient	A6	%Food expenditure as a proportion of total consumption expenditure	N
	Low carbon energy indicators	Total energy consumption	B1	Ten thousand tons standard coal	N
		Proportion of coal consumption	B2	%	N
		Proportion of renewable energy consumption	B3	%, Electricity and other energy accounts for the proportion of total energy consumption	P
		Energy carbon emission coefficient	B4	Tons / ton of standard coal, carbon emissions as a proportion of total energy consumption	N
		Energy conversion rate	B5	10000 yuan / ton of standard coal, output value generated by unit energy consumption	P
		Per capita carbon emissions	B6	Tons / person	N
	Low carbon ecological indicators	Smoke (powder) dust emission	C1	Ten thousand tons	N
		forest coverage	C2	%	P
		Afforestation area per capita	C3	Hectare / 10000 people, average annual afforestation area per person	P
		Effective utilization rate of industrial solid waste	C4	%	P
	Low carbon technical indicators	R&D investment rate	D1	%R&D expenditure of Enterprises above Designated Size accounts for the proportion of GDP	P
		Patent authorization	D2	Ten thousand, and the number of valid patents approved in that year	P
		Proportion of low carbon technology input	D3	%The proportion of the total investment in fixed assets of the information industry, financial industry and scientific research service industry in the current year	P
		Number of employees in scientific research and technology industry	D4	10000 people, annual equivalent of R&D personnel in Enterprises above Designated Size	P

Notes: P indicates a positive relationship between this index and the evaluation effect; N indicates a negative relationship between this index and the evaluation effect.

3.1.4 Indicators Reflecting Low Carbon Technology

This study uses low-carbon technology indicators to measure the technical conditions for the implementation of low-carbon economy, which determine the development potential and speed of low-carbon economy in the region. There are four detailed indicators: the first indicator is the investment rate of R&D funds, which reflects the potential of regional technological innovation; the second indicator is the amount of patent authorization, which reflects the reserve of low-carbon technology, and patents are more competitive, which shows the achievements in the process of transition to a low-carbon economy; the third indicator is the proportion of fixed assets investment in low-carbon industry in the year, China's total investment. There are many types of industries in the Yearbook, among which the technology industry with zero carbon emission and its development promoting the implementation of low-carbon economy is selected. In this paper, it is classified as low-carbon industry, mainly including information technology industry, financial industry and science and technology service industry. The annual fixed asset investment proportion of low-carbon industry reflects the government's attention to the transformation of low-carbon economy. The larger the proportion is, the stronger the regional low-carbon innovation ability is; the fourth indicator is the number of practitioners in the scientific research and technology industry, which is the driving force of low-carbon technology research and development. The more the number is, the higher the success rate of low-carbon technology adoption is.

3.2 Model Establishment

It is assumed that there are m evaluation units $A_i, i \in M = \{1,2,...m\}$ in the low-carbon econom-

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ic evaluation system, including n evaluation indexes $F_j, j \in N = \{1,2,...n\}$. Set the evaluation matrix as $X = (x_{ij})_{m*n}$, where x_{ij} is the attribute value of the i-th evaluation unit under the j-th index. Then the evaluation steps based on Entropy Weight Grey Relation TOPSIS are as follows:

3.2.1 Determine the Normalization Matrix

Because of the difference in dimension, order of magnitude and positive and negative orientation of each index, the range method is used to normalize the obtained original data, and the standard matrix is set as $Y = (y_{ij})_{m*n}$.

For positive indicators:

$$y_{ij} = [x_{ij} - \min_i(x_{ij})] / [\max_i(x_{ij}) - \min_i(x_{ij})]$$

For negative indicators:

$$y_{ij} = [\max_i(x_{ij}) - x_{ij}] / [\max_i(x_{ij}) - \min_i(x_{ij})]$$

3.2.2 Measuring Positive and Negative Ideal Values

According to the entropy weight method, the index weight $w = (w_1, w_2, ..., w_n)$; furthermore, the normalized decision matrix of the weight can be defined as $Z = (z_{ij})_{m*n}$, in which $z_{ij} = w * y_{ij}, i \in M, j \in N$, the positive and negative ideal solutions of the weighted normalized matrix can be determined after further data analysis.

$$Z^+ = (z_1^+, z_2^+, ..., z_n^+), Z^- = (z_1^-, z_2^-, ... z_n^-)$$

in which

$$z_j^+ = \max_i(z_{ij}) = w_j, Z^- = (z_1^-, z_2^-, ... z_n^-).$$

3.2.3 Calculate the Grey Correlation Degree

In each evaluation index, the grey correlation coefficient matrix between the actual value and the ideal value can be obtained after calculation. The correlation matrix of positive ideal solution and negative ideal solution can be defined as $R^+ = (r_{ij}^+)_{m*n}$, $R^- = (r_{ij}^-)_{m*n}$ where:

$$r_{ij}^+ = [\min|z_j^+ - z_{ij}| + \rho \max|z_j^+ - z_{ij}|] / [|z_j^+ - z_{ij}| + \rho \max|z_j^+ - z_{ij}|] = \rho w_j / (w_j - z_{ij} + \rho w_j)$$

$$r_{ij}^- = [\min|z_j^- - z_{ij}| + \rho \max|z_j^- - z_{ij}|] / [|z_j^- - z_{ij}| + \rho \max|z_j^- - z_{ij}|] = \rho w_j / (z_{ij} + \rho w_j)$$

In the above formula, $\rho \in (0,\infty)$ is the resolution coefficient between the actual value and the ideal solution; the value of ρ is inversely proportional to the resolution, and the normal value range is (0, 1). In actual operation, the value can be taken according to the specific situation, generally $\rho = 0.5$.

Then calculate the grey correlation degree between each evaluation index and positive and negative ideal solution: $r_i^+ = \sum_{j=1}^{n} r_{ij}^+ / n$, $r_i^- = \sum_{j=1}^{n} r_{ij}^- / n$.

3.2.4 Analyze the Distance Between Evaluation Scheme and Ideal Scheme

The Euclidean distance between the real correlation degree of each evaluation index and the positive and negative ideal solutions was calculated d_i^+, d_i^-:

$$d_i^+ = \sqrt{\sum_{j=1}^{n} (z_{ij} - z_j^+)^2}, d_i^- = \sqrt{\sum_{j=1}^{n} (z_{ij} - z_j^-)^2}$$

Dimensionless treatment is made for the correlation degree r_{ij}^+, r_{ij}^- and the Euclidean distance d_i^+, d_i^- respectively:

$$R_i^+ = r_i^+ / \max r_i^+, R_i^- = r_i^- / \max r_i^-$$
$$; D_i^+ = d_i^+ / \max d_i^+, D_i^- = d_i^- / \max d_i^-;$$

Then, combining the Euclidean distance and the correlation degree, we get the following results:

$$S_i^+ = \alpha R_i^+ + \beta D_i^-, S_i^- = \alpha R_i^- + \beta D_i^+ \quad i \in M,$$

Where α and β reflect the evaluator's preference for position and shape, and $\alpha, \beta \in [0,1]$, $\alpha + \beta = 1$. Decision makers can determine α and α values according to their preferences. S_i^+ synthetically reflects the approach degree of evaluation index and ideal scheme, and the higher the value is, the better the scheme degree is; S_i^- synthetically reflects the distance degree between evaluation index and ideal scheme, and the higher the value is, the worse the scheme degree is.

3.2.5 Calculate the Relative Closeness of Each Scheme and Get the Evaluation Value

The relative closeness of each scheme can be calculat-

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ed as $C_i^+ = S_i^+ / (S_i^+ + S_i^-)$, $i \in M$. The calculated value of relative closeness is directly proportional to the evaluation effect, that is, the greater the value, the better the effect, and the better the evaluation effect of the scheme; otherwise, the less ideal the effect[11].

4. An Empirical Analysis of the Development of Low Carbon Economy in Shandong Province

The above-mentioned comprehensive evaluation index system and evaluation model are used to analyze the situation of Shandong Province in 2012-2016. (see Table 3 for calculation results)

Table 3. Shandong Province' evaluation index data of low carbon economy (2012-2016)

Unit	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4
2012	53943.51	8.20	47.30	4.46	67.40	36.90	24080.97	46.4	20.1	53.15
2013	58694.84	8.50	48.83	4.65	67.76	35.00	24930.93	46.4	20.0	53.86
2014	63231.86	7.80	48.99	5.12	68.00	34.30	25636.29	43.7	22.9	51.67
2015	67114.53	8.00	50.61	5.58	68.71	34.50	25662.31	42.7	24.1	50.83
2016	72290.25	7.50	52.59	5.95	69.20	34.18	27157.91	39.7	25.6	49.23
Unit	**B5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
2012	2.37	1.28	32.8	57.7	10.15	84.62	2.08	153598	2.84	62.91
2013	2.51	1.26	35.4	58.2	13.06	84.98	2.31	170430	2.40	65.24
2014	2.65	1.24	45	58.69	14.13	96.37	2.39	179953	2.67	67.62
2015	2.84	1.20	34.8	58.88	36.99	90.98	2.47	241176	2.72	68.02
2016	2.98	1.22	28.2	58.98	27.78	87.42	2.53	259032	2.52	73.52

Data sources: Shandong Statistical Yearbook (2011-2016).

Entropy weight method is a kind of objective weight method with mature principle. The weight is calculated according to relevant information. The specific calculation process is as follows: Let the entropy of the j-th index be $H_j = -k \sum_{i=1}^{m} f_{ij} \ln f_{ij}$, where $H_j = -k \sum_{i=1}^{m} f_{ij} \ln f_{ij}$, $k = 1/\ln n$ (assuming $f_{ij} = 0$ is $f_{ij} \ln f_{ij} = 0$), then the entropy weight of the j-th index is $w_j = (1 - H_j) / (n - \sum_{j=1}^{n} H_j)$. The weight value of each evaluation index after calculation is shown in Table 4.

Table 4. Shandong Province's weight table of low carbon economic evaluation indexes (2012-2016)

index	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4
weight	0.0668	0.0428	0.0503	0.0525	0.0451	0.0389	0.0651	0.0531	0.0485	0.0502
index	**B5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
weight	0.0360	0.0407	0.0609	0.0547	0.0323	0.0683	0.0456	0.0422	0.0701	0.0359

From the information given in the above table, we can draw the conclusion that there is little difference in the weight of indicators; after ranking, we can find that indicators D3 (proportion of low-carbon technology input), C4 (effective utilization rate of industrial solid waste), A1 (GDP per capita), B1 (total energy consumption) have relatively large weight values, which are 7.01%, 6.83%, 6.68% and 6.51% respectively, indicating the level of low-carbon technology and carbon. Foreign exchange construction, energy endowment and human lifestyle will have a greater impact on the development of low-carbon economy.

After the weight is calculated by the entropy weight method, the grey correlation degree and Euclidean distance between the evaluation unit and the positive and negative ideal solution are calculated, and the most dimensionless treatment is carried out:

$$R^+ = \{0.6523, 0.7358, 0.8172, 0.8235, 1.0000\},$$
$$R^- = \{1.0000, 0.7726, 0.6348, 0.6703, 0.6351\},$$
$$D^+ = \{1.0000, 0.8501, 0.7086, 0.6813, 0.6052\},$$
$$D^- = \{0.5892, 0.6726, 0.7083, 0.7877, 1.0000\}$$

When $\alpha = \beta = 0.5$, the grey correlation degree and Euclidean distance are combined to obtain:

$$S^+ = \alpha R_i^+ + \beta D_i^- = \{0.6208, 0.7042, 0.7628, 0.8056, 1.0000\},$$
$$S^- = \alpha R_i^- + \beta D_i^+ = \{1.0000, 0.8114, 0.6717, 0.6758, 0.6202\}$$

According to the proximity degree formula, the following equation can be calculated:

$$C^+ = \{0.3830, 0.4646, 0.5318, 0.5438, 0.6172\}$$

The criterion for the closeness evaluation of this model is that the greater the closeness, the higher the level of low carbon development; thus, the ranking of each evaluation unit can obtain the low carbon economic development level of each year: 2012-2016.The conclusion is that the economic development of Shandong Province is changing from the traditional extensive mode of high energy con-

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sumption and high carbon emission to the mode of low energy consumption and low carbon emission. The development of low carbon economy is moving forward in a good direction with obvious progress.

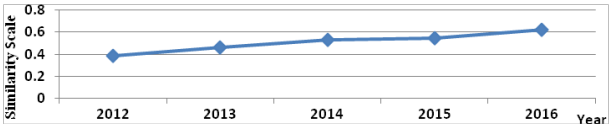

Figure 1. Shandong 'development trend of low carbon economy

5.Conclusion

This study establishes a comprehensive evaluation index system for low-carbon economy, and empirically analyzes the development of low-carbon economy in Shandong Province. The conclusions are as follows: Firstly, the development of low-carbon economy in Shandong Province is moving in a good direction and the progress is obvious. Secondly, the overall situation is still relatively backward. The energy consumption is too high, the industrial structure is unbalanced, and the low-carbon ecological benefits are poor. These low-carbon inputs have constrained the continued growth of the province's low-carbon economy and should be the focus of relevant work in Shandong Province in the future. With reference to the advantages and problems of low-carbon economic development in Shandong Province, combined with the development status of low-carbon economy in other advanced provinces and cities, this paper proposes relevant countermeasures in order to provide a reference for the better growth of Shandong's low-carbon economy and the coordinated development of other provinces.

Firstly, the government should implement effective policy guidance and establish a legal system to ensure the development of low-carbon economy. The government has issued policies and guided funds to lean towards low-carbon industries, which can be given preferential policies in tax, water, electricity, land and other aspects to ensure the steady development of low-carbon economy. At the same time, we can strictly limit the development of high energy consumption and high pollution industries and reduce emissions by means of laws. Moreover, the whole society advocates low-carbon consumption, creates a low-carbon atmosphere, enhances the public awareness of low-carbon consumption, and realizes the coordinated development of regional low-carbon economy.

Secondly, implement the low-carbon policy and ensure the input of resources. In terms of funds, ensure the implementation of various plans related to low-carbon economic development, overcome difficulties and ensure the timely availability of funds in the process of project implementation. In terms of human resources, the government can train its own excellent talents, or jointly train with scientific research institutes, enterprises and institutions to meet the needs of relevant projects for talents.

Thirdly, develop or introduce advanced low-carbon technologies and strengthen regional low-carbon technology strength. Shandong Province should make its own low-carbon technology development direction according to the sustainable development strategy. Enterprises, scientific research institutes and other organizations are encouraged to fully cooperate, actively carry out research and development and strive to promote demonstration application projects by taking advantage of the characteristics of the organization, gradually establish a low-carbon technology system focusing on green energy technology, energy conservation and emission reduction technology, and provide support for high-quality economic development.

Fourthly, strengthen the promotion of low-carbon economy and promote exchanges and cooperation between regions. The government is an important force to promote the development of a low-carbon economy, but the development of a low-carbon economy requires full participation, using the Internet, television, self-media, newspapers and other media to do a good job of propaganda, so that the masses can recognize the importance of tackling climate change. In addition, the current low-carbon economy development has become the consistent goal of development in various regions. In order to develop a low-carbon economy more efficiently, it is necessary to strengthen cooperation and exchanges between provinces and actively learn the mature measures and measures of advanced provinces, with a view to provide valuable experience for low carbon economy development in our province.

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ARTICLE

Strategic Asset Seeking: A Motivation of Chinese Business Groups' International Operation

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ABSTRACT

Since the development of Chinese firms, more and more Chinese firms would like to operate their business over the world to increase their strength. For the difficulty of expanding the scale of the company in a short term, many Chinese firms made use of strategy asset seeking to achieve their goal. This article will develop the evidence of Haier Group and Lenovo Group and find the role and effect of their outward strategy asset seeking.

1. Introduction

Since the economic reform in 1978, China have absorbed a large number of foreign direct investment (FDI) in China. However, the development of outward FDI is not as fast as inward FDI. These years, with the government's "go out" policy, the outward FDI have developed rapidly. In 1998, the outward FDI was only 2.2 billion dollars, and 2.8 billion dollars in 2003. However, it had achieved 59 billion in 2010 (Zhang 2003: 104; Zhang 2011: 75). The private firms are a part of these investments. On one hand, China's policy encourages the private firms to invest outside, even provides them some benefits to support. The private firms may find the tax havens and offshore financial centers to do the business such as Hong Kong and Cayman (Sutherland 2010: 2). On the other hand of economy, there is a hypercompetitive domestic economic environment in China. 'This has made it difficult for domestic firms build up competitive advantage outside the domestic space' (Boisot and Meyer 2008: 350). Strategic assets are one of the most important resources for Chinese firms to seek outside the world. This essay will discuss Chinese firms' international operations through the motivation of strategic asset seeking, focusing on the strategic asset seeking of Haier and Lenovo Group's case study. Finally analyze the argument: strategic assets seeking is a motivation for Chinese business groups internationalize their operation.

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2. Background and Literature Review

Based on mainstream literatures, there are four motivations for China's outward FDI: market seeking, diversification seeking, resource seeking and strategic assets seeking investment (Yan 2013: 129). Strategic assets seeking is one of the most significant aim for Chinese firms' outward FDI. Strategic assets mean the firm's core resources and capacities of competitive advantages. Instead of nature resources, strategic assets are the created assets from a long period working. The strategic assets is difficult to transfer and cannot repeat. It is the core competence for a company (Li, 2005 cited by Li 2011: 96). Chinese firms are lack of strategic assets. So, the motivation for Chinese business groups internationalize their operation is for strategic assets seeking. There is an author named Deng Ping, he mainly studies this area. He published three articles in this area. He thinks, the investing for strategic resource is a case of Chinese firms' outward FDI (Deng 2007: 71). In the next paragraphs, the writer will use Deng's articles as the key resources, to prove the argument that Chinese business groups internationalize their operation in order to receive strategic assets.

3. Strategic Asset Seeking OFDI: Evidence

After economic reform, there are great increasing numbers of inward foreign direct investment in China. Many international firms think highly of China's benefits, such as market, consumers market and cheap labor force. So, the outward FDI seems less significant (Deng 2007: 72). These years, many Chinese firm started to do some investments in other countries especially in the developed countries. In 2002, 'China became the second largest outward investor among all emerging countries; by 2004, 5163 Chinese firms had invested a total of 44.8 billion dollars abroad' (MOFCOM, 2005 cited by Deng 2007: 72); in 2006, the numbers increased to 10,000 firms, and invested 73.33 billion dollars nearly all the countries worldwide (MOFCOM, 2007 cited by Deng 2009: 79). In these outward FDI, Chinese firms focus on the areas of Hong Kong and the United States. According to the United States Bureau of Economic Analysis, Chinese firms had established 646 research and development centers in the United States. Most of them are manufacture sectors (Deng 2007: 72). Chinese firms are expanding their international operations to seek better resources, and these developments will not succeed without China's government support. According to Deng, 'Chinese policymakers have recognized outward investment as a necessary stage of Chinese companies' growth and occupying in global market'. So, they encourage and support for key firms to go globally (Deng 2007: 72). The two examples in next sections, Hailer and Lenovo Group, are all benefited from the government support. China is a centralized country; all the firms are under the government's control. So, the government policies are extremely important for the firms to go abroad.

As it was mentioned, because of the benefits, a large number of China's firms invest their companies outside. The writer thinks, most of the outward FDI are seeking strategic assets. Some studies concluded that there are many disadvantages for developing countries' multinationals compared to MNCs from developed countries by the limited technology and internationally known brands and trade names (Child and Rodrigues 2005: 386). So, in China's outward FDI, the firms are in a situation of disadvantage-based merger and acquisition (M&As). Which means, the weak Chinese firms acquire the strong company in the developed country, to receive the strategic asset. Technological innovation seeking is one of the aims for Chinese firms to seek (Rajeswary 2000: 138). For example, the Lenovo Group purchased IBM, and acquired its personal computing technology. It will cost a long period and very difficult for Chinese firms to develop the technology independent, but a faster and easier method to purchase these mature technologies from developed countries.

In October 2000, 'the Chinese government formally announced the "go global" strategy as part of its long-term development plan'. In this plan, the government encouraged Chinese firms to invest overseas companies and 'utilize internationally advanced technologies, managerial skills and professionals' (Deng 2007: 72). The "go global' strategy is including the brand resource seeking, such as Haier Group. The aim of its outward investment is to establish a globally brand. Actually, there are some achievements in China's outward FDI these years. In 2004, China's outward FDI is equal to the inward FDI (Deng 2007: 72). In addition, China's firm's 'international expansion as a springboard to counter-attack global rivals' major foot' (Luo and Tung, 2007 cited by Sutherland 2009: 19), then, acquire strategic assets from developed market economy to support globalization strategy (Sutherland 2009: 19). Finally, Chinese government wants China's firms to go abroad and join the Global 500 companies or build Chinese international brands (Deng 2007: 72). So, strategic asset-seeking is one of the motivations for Chinese business groups international their operation.

4. Strategic Asset Seeking OFDI: A Case Study of Haier Group

Haier Group is well-known Chinese firm. It has internationalized its operation through the greenfield estab-

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lishment to seek strategic asset for international brand building. Haier began in 1984 as a collectively-owned enterprise, it mainly product manufactured goods, includes air conditioners, microwave ovens, refrigerators, microwave ovens and televisions. Because of the company's international strategy, it became to one of the first Chinese enterprises to implement an internationalization strategy' and 'started to export to Europe and the USA in 1990 and to Japan in 1991' (Child and Rodrigues 2005: 394).

Haier Group is an example of China's firm that use greenfield investment to seek strategic asset. Which means it finds a new market in another country. For example, in America, the Haier branch companies will adjust its products to local market need. 'It set up a marketing center in New York, and design the research and development centers in Los Angeles and Boston', to transfer the technology and products for the local consumers' need (Deng 2007: 74-75). In April 1999, the firm invest 40 million dollars in South Carolina as the largest Chinese greenfield investment in the United states. Actually, the investment was successful, by 2004, 'the factory was turning out 400,000 family-size refrigerators per year (Haier Group, 2004 cited by Deng 2007, 75). Haier Group invested successfully in the United State, but many people would ask, why Haier choose to open a factory in such high labor cost area in the United States? Some literatures proved, the company wants to bypass non-tariff barriers on Chinese appliances import (Deng 2007, 75). In addition, Haier's investment in the United States is a long-term strategy. The firm's key strategic asset seeking was to establish a global recognized brand. In 1999, Haier set the goals of entering the world's 500 largest companies, and building an international well-known appliance brand. To achieve this aim, the companies have built a large number of factories around the world in the next several years. 'By 2004, it had set up 18 design institutes, 13 overseas production factories, with 58,800 sales agents worldwide' (Deng 2004: 13). Therefore, the most significant aim for Haier Group is to seek the international brand. It is an important section in strategic asset seeking. Besides, the America's design research, innovation and technology are all the strategic asset which Haier Group is interested in (Haier Group, 2004 cited by Deng 2007, 75)

Haier Group is one of the most successful firms in outward FDI. It thinks highly of American market. In 2000, Haier invested 40 million dollars to construct a factory in Camdens, South Carolina, and its market share reached 25 percent in 2001 in the United State. In recent years, Haier Group still focus on the international expansion. For example, in washing machine sector, the business accounted for 8.4% of market share through the worldwide washing machine brands in 2009 (Haier annual report, 2009), the market share increased to 9.1% of the retail sales, and keep the first in the world (Haier annual report, 2010). This means, Haier's international brand is well-known through the world and it achieves the goals in some degree. As a result, Haier have achieved its aims. Now, Haier is an international stock business group. It holds five brands' subsidiaries. The first brand is Casarte, it is an international premium brand of electric appliances and kitchenware from Italy. This brand came up with the "Art" concept of kitchen. Leader is Haier Group's third brand after Haier and Casarte, its design is mainly based on consumers' demands of household appliances. The brand of Aqua is also an international brand from Japan, it mainly product washing machines, and protects the environment in the same time. The final international brand is from New Zealand, named Fisher and Paykel. It 'has been designing products since 1934 and has grown into a global company in 50 countries including the United States, Mexico and Italy'. What's more, with trends of internet age, Haier Group develops its electronic commerce brand of Goodaymart. The customers can purchase the household goods through the internet conveniently (Haier Brands 2014). These international brands are Haier's strategic assets, they help Haier to established its international market. All of Haier's strategic assets develops Haier Group's international operations.

5. Strategic Asset Seeking OFDI: A Case Study of Lenovo Group

Another method for Chinese firms to "go global" is mergers and acquisitions (M&As)

Compare with greenfield entry, M&As is an easier way to seek strategic asset because the parent company purchase the foreign subsidiary directly, to acquire its brand, foreign market and customers, especially, the technology. Lenovo Group is a typical international M&As for technology seeking.

In December 2004, Lenovo Group acquired IBM's Personal Computing (PC) business for 1.75 billion dollars. It was the largest ever foreign investment for Chinese manufacturers. 'As part of the transaction, Lenovo acquired the "Think" family group of products. The "Think" group included ThinkPad notebooks, ThinkCentre desktop and ThinkVision monitors, as well as a full line of PC accessories and options (Deng 2007: 76). Lenovo Group purchased IBM's PC business is a prominent example of M&As to strategic asset seeking outward FDI. So, why do Lenovo Group choose IBM group? Why did they succeed in the case of mergers and acquisitions? In IBM group's

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international competition, they would give up some business which lost the main competitive advantages. In this period, the purchase price is more reasonable, and it is easier to cooperate with the parent company after M&As, then achieve a better synergistic effect in China. For Lenovo Group, it mainly acquires IBM's technology, included research and development technology and ability, the brand and more than 4000 patents (Li 2011: 99-100). The strategic resources were not only for the products and technology, but for IBM's talents. 'As one senior manager commented, the Lenovo Group has the world-class managerial team from IBM, and that is invaluable' (Lenovo, 2005 cited by Deng 2007: 76). Chinese firms lack technology and innovation 'because they have historically suffered from a weak national innovation system' (Nolan, 2001 cited by Deng 2007: 77). The lack of innovation technology results in low quality product have bottlenecked economic growth (Deng 2007: 77), and lost the competitive edges in globalized world today.

This M&As have made great positive consequences for Lenovo Group. According to a senior manager with Lenovo Group: 'If Lenovo had done itself, it would have taken several times the money and even eight to ten years. Most importantly, those efforts would not have necessary guaranteed that we would reach those achievement, as IBM PC unit had' (Lenovo, 2005 cited by Deng 2007: 79). What's more, the management team and technological talents will not only bring their core technology from IBM, but will continue to research, develop and innovate their products in Lenovo Group. After the M&As in 2004, Lenovo's operating performance is increasing especially in recent years. The Lenovo Group's global PC market share shows as follows (Figure 1):

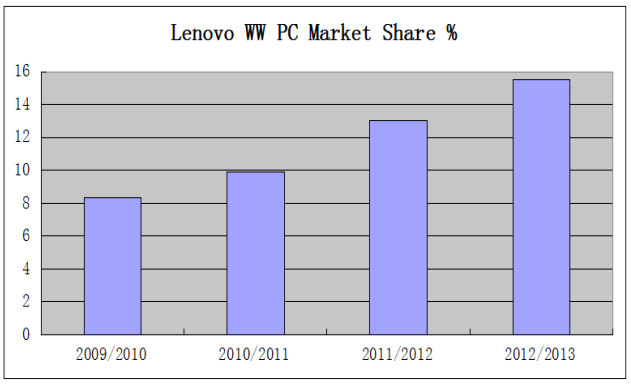

Figure 1. Lenovo WW PC Market Share (%)

Data resources: Lenovo Annual Report, 2012/13.

After the 2008 financial crisis, Lenovo's PC operation is increasing continuously. The market share in 2009 was 8.3% in the world. When it came to 2013, the market share had reached 15.5%. It was the first in PC operation in the world (Lenovo annual report, 2012/13). In addition, it is worth to mention in 2004, China's domestic PC market share of Lenovo was 26.3% (Lenovo annual report, 2004/2005), but in 2008, the percentage had increased to 28.8% (Lenovo annual report, 2008/2009). In these data, Lenovo Group's development is rapidly after it purchasing IBM. The IBM group provide the technology and other strategic assets, such as brand names, as well as access to U.S. markets and costumers (Lenovo, 2005 cited by Deng 2007: 79). Finally, IBM's strategic assets helps Lenovo achieve the first PC brand in the world, and internationalize its operations.

6. Conclusion

It was the aim of this article to discuss the relationship between the strategic assets seeking and Chinese firms' international operations. In the article, the author use the evidences and two case studies of Haier and Lenovo Group to support her argument. The results showed when Chinese firms go abroad, strategic assets seeking is one of the most important motivations. There will be more and more Chinese firms willing to invest abroad. To conclude, strategic assets seeking is a motivation for Chinese business groups internationalize their operation.

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ARTICLE

An Empirical Research of Futures Program Trading Based on RSI And CCI Indicators

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ABSTRACT

Over the years, many scholars have conducted a wealth of empirical research on the effectiveness of technical indicator analysis in the financial market, and the conclusions are obviously different. Among them, two program trading models based on RSI and CCI indicators achieve an annual return rate of more than 180% in the empirical research of palm oil futures program trading, but the amount of data used in this study is too small, and the transaction cost is not considered. As the actual trading process has the characteristics that investors pay more attention to the sustainability of the model's profitability, and that investors' trading varieties are diverse and with high transaction cost, this paper further verifies the sustainability and general applicability of these two models: using the closing price of 1-day and 30-minute K-line of 18 kinds of commodity futures in recent 10 years to investigate the changes of annual return rate, maximum withdrawal ratio etc. under different transaction costs and K-line cycles. The results show that the model's profitability is time-varying, and the transaction cost has a greater influence on the rate of return of 30-minute K-lines than that of 1-day K-lines.

1. Introduction

With the rapid development of the financial market, the trading mode which relies on the experience of investment managers to carry out manual operation is confronted with practical challenges such as the aggravation of market risks and frequent changes, so it is necessary to introduce program trading to automatically place orders, improve efficiency and control risks. Nowadays, the proportion of program trading in the stock, bond, option, futures and other markets is increasing. Financial institutions such as Morgan Stanley,

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Deutsche Bank and Goldman Sachs are the most active participants in program trading.

Transaction cost can be divided into explicit transaction cost and implicit transaction cost [1]. Among them, the explicit transaction cost includes transaction fee, stamp tax, etc.; the implicit transaction cost mainly includes market impact cost, opportunity cost, etc. Market impact refers to the change of transaction price caused by the submission of an order to the market, which often leads to transaction slippage. Theoretically, the size of market impact is the difference between the price when the order is executed and the price when the order does not exist in the market. Opportunity cost refers to the part of profit lost caused by the order execution failure. Due to the limited liquidity and rapid price changes in the market, the limited price orders submitted by investors may not be able to be executed completely, resulting in opportunity cost. In fact, by analyzing the data of Tel Aviv Stock Exchange, Alam and Ttkatch[2] found that only about 48% of orders could be completely closed. If investors try their best to push orders to be fully executed to reduce the opportunity cost, this will then undoubtedly increase the market impact cost. Compared with the explicit cost, implicit cost is not easy to be observed and measured directly, but it accounts for a large proportion in the total transaction cost.

Technical indicators are divided into trend indicators and swing indicators. Trend indicators include Moving Average (MA) and Moving Average Convergence and Divergence (MACD), swing indicators include Relative Strength Index (RSI), Commodity Channel Index (CCI), William Index (WMS), KDJ Index (KDJ), On Balance Volume (OBV) and Psychological Line (PSY), etc. Many scholars have done a lot of empirical research on the predictability of technical indicator analysis in financial market, the empirical conclusions are obviously different. For example, park and Irwin (2007)[3] found in the literature review that 56 of the 95 empirical literature conclusions support that the technical analysis method can obtain excess earnings, and 20 of them believe that the technical analysis method cannot obtain excess earnings. Baetje et al. (2016)[4] pointed out that the prediction effect of technical indicators is stable. Lin Jie et al. (2018)[5] constructed two models based on the RSI and CCI indicators respectively. When assuming the margin ratio equals 8% and considering neither transaction cost nor slippage, the back testing results of six-month trading data of palm oil futures show that both models can achieve an annual return rate of more than 180%. Different from the previous studies, Chong (2008)[6] found that both MACD and RSI analysis can obtain excess return, but the excess return decreased after 2000. In recent years, with the development of computer and artificial intelligence, some scholars combine multiple technical indicators, or combine technical indicators with SVM (support vector machine), RRL (recurrent reinforcement learning), ANN (artificial neural network) or other methods to build a new transaction model. For example, Wu et al. (2015)[7] verified that the combination of MACD, RSI and KDJ indicators can accurately predict the short-term price change trend of the stock market. Kim (2003)[8] used 12 technical indicators as the initial parameters of SVM to predict the daily change direction of Korean stock composite index. Dempster and Leemans (2006)[9] found that when using RRL model to predict, the method of adding technical indicators to the input data is not better than the method of using only lagged return as input. Zhang and Maringer used genetic algorithm to select the best subset of input parameters of RRL model from many indicators including lagged return, technical indicators, fundamental indicators and econometric indicators. Their experimental results using data of 238 (2013)[10] and 180 constituent stocks (2015)[11] of S&P 500 index show that the optimization model of genetic algorithm is better than that using only closing price lagged return as input, which shows that the joint information found in the combination of technical indicators, fundamental indicators and economic indicators is conducive to the performance of RRL model.

In many of the above studies, Lin's two models[5], based on the RSI and CCI indicators ,achieved an annual return rate of more than 180%, which is the highest in many models. Then, when considering the transaction cost, can these models still bring stable benefits to futures trading? In order to answer this question, this paper will further verify the two models for the following reasons: firstly, compared with the short-term profit level of the trading model, investors pay more attention to the sustainability of the model's profitability in actual trading. Besides, investors' trading varieties are diversified, while Lin's study only used the closing price of palm oil futures for six months, the number of futures varieties and the amount of data tested are too small. So, the sustainability and universal applicability of these two models have not been fully verified in Lin's study; secondly, the transaction cost is high in the actual transaction. Usually, traders in the market are mainly divided into individual traders and institutional traders. The amount of funds of individual traders is small, so the transaction fee rate is high; institutional investors can enjoy a lower transaction fee rate because of their capital advantages, but their transaction volume is large, resulting in higher market impact cost and opportunity cost, so the total transaction cost is not less than that of individual investors. Thirdly, a verification

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deducting the transaction cost can better reflect the profitability and risk level of a model in the actual investment. Based on this, this paper mainly studies the changes of investment income and risk of 18 kinds of commodity futures when trading with the two models based on RSI and CCI indicators under the consumption that the transaction cost is the normal commission of futures companies.

2. Trading Models

2.1 RSI Indicator Model

RSI indicator was proposed by Welles Wilder in his book "new ideas of technical trading system" in 1978. It is calculated and plotted according to the ratio of the sum of price rise and the sum of price change in a certain period of time to measure the relationship between market supply and demand. The calculation method of RSI is: the commonly used parameters of RSI are 5, 9 and 14. When selecting 14 as the parameter, 15 closing prices of the previous 14 K-lines and the current K-line are obtained, then for each of the last 14 K-lines subtract its closing price from the closing price of its previous K-line to obtain 14 numbers. The calculation formula of RSI is as follows:

$$M = \sum_{n=1}^{14} a_n (an \geq 0) \tag{1}$$

$$N = -\sum_{n=1}^{14} a_n (an < 0) \tag{2}$$

$$RSI_{14} = \frac{M}{M+N} \times 100 \tag{3}$$

The above formula uses 14 as parameter, M represents the sum of price increases in 14 K lines, N represents the sum of price decreases, and M+N represents the sum of overall price changes. The value of RSI is between 0-100, which is larger when the market is strong and smaller when the market is weak. RSI indicator can use different period parameters. RSI of different periods can be used in a comprehensive way. In Lin's study, two RSIs with different parameters were used. The RSI with smaller parameter is called short-term SRI1, the RSI with bigger parameter is called long-term SRI2.Based on this, the trading strategy adopted by Lin is: buy long when RSI1 goes up through RSI2 and sell short when RSI1 goes down through RSI2.

2.2 CCI Indicator Model

The CCI indicator created by Donald Lambert in the 1980s is widely used in the stock and futures markets. Different from most technical indicators that use opening-, closing-, highest- or lowest-price separately, CCI introduces the concept of deviation level between price and average interval of fixed period price according to the statistical principle, especially emphasizes the importance of the average absolute deviation of price.

The value of CCI indicator is calculated as follows: first calculate the average value D of the closing-, the highest- and the lowest-price of the current K-line, then calculate the difference value E between D and the moving average of D in N-cycles, finally divide E by 0.015 times of the average absolute deviation of D in N-cycles to get the CCI value, where the average absolute deviation is a statistical function. CCI takes 100 as the reference standard. When CCI goes up through 100, it means that the market becomes strong, vice versa. Accordingly, the trading strategy adopted by Lin is: buy long when CCI goes up through 100 and sell short when CCI goes down through 100.

3. Empirical Results and Analysis of the Model Considering Transaction Costs

3.1 Test Varieties, Test Data and Transaction Costs

In this paper, we use the software Tradeblazer v5.5.2.0 to write and simulate the futures program trading based on RSI and CCI indicators. The details and results of the back testing are as follows:

For back testing, the closing price of 1-day and 30-minute K-line of 18 kinds of commodity futures with the largest trading volume in China's futures market were measured. The data measurement period is from January 1, 2008 to July 20, 2019. Due to different starting date of futures on the market, the data amount of each futures variety may diverse.

Most individual investors have a small amount of capital and transaction volume, so their implicit transaction cost can be ignored, and their total transaction cost is about the regular transaction fee. Although institutional investors can enjoy a lower transaction fee rate, the implicit transaction cost increases significantly with the increase of capital volume, so the total transaction cost is not necessarily lower than that of individual investors. In order to simplify the analysis, this paper assumes that the total transaction cost of both individual investors and institutional investors is the transaction amount multiplied by the normal transaction fee rate. Although the conventional fee rate varies with the futures companies, futures varieties and trading time, it usually fluctuates from 0.00006 to

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0.00016. For simplicity, this paper tests RSI and CCI indicator models only under these two boundary rates.

Generally, the margin ratio paid by individual investors is between 10% and 16%. However, in order to compare with the empirical results of Lin, this paper assumes that the margin ratio of all varieties is also 8%, and uses the same inspection indicators: annual return rate, maximum withdrawal ratio, sharp ratio, winning ratio and average profit loss ratio. In addition, in order to more accurately measure the risk of the model in extreme cases, i.e. the

Table 1. Back testing results of RSI indicator model for 1-day data

	Transaction fee rate=0.00006					Transaction fee rate=0.00016				
	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio
PTA	134.78	337.60	0.98	33.26	3.10	129.47	346.49	0.93	33.26	3.04
SR	27.48	570.91	0.34	28.13	2.79	19.97	637.10	0.28	27.71	2.78
C	21.65	167.02	0.24	33.91	2.19	13.62	174.86	0.15	33.91	2.10
M	52.70	547.09	0.37	30.91	2.58	45.13	574.86	0.31	30.91	2.52
FU	20.21	599.24	0.11	26.63	2.94	14.88	651.18	0.07	26.63	2.89
P	65.67	285.80	0.50	34.82	2.38	60.48	300.07	0.24	34.82	2.33
ZN	-36.78	960.26	-0.17	28.00	2.33	-44.24	1029.61	-0.22	27.43	2.35
CU	8.51	418.85	0.04	28.46	2.57	0.84	427.19	-0.01	28.27	2.54
RB	142.85	338.22	0.97	32.24	3.12	136.27	347.67	0.92	32.24	3.06
J	187.64	279.21	1.10	32.25	3.30	182.19	281.98	1.06	31.92	3.30
RM	-62.06	547.75	-0.40	25.67	2.48	-70.99	594.14	-0.46	25.67	2.43
BU	23.14	407.72	0.13	29.13	2.57	16.12	416.60	0.09	29.13	2.52
I	188.94	286.29	1.20	32.12	3.20	184.17	288.05	1.18	32.12	3.16
JD	-4.80	470.35	0.03	26.43	2.75	-12.46	481.85	-0.02	26.43	2.70
PP	118.33	300.01	0.82	31.94	2.92	111.58	304.07	0.78	31.94	2.86
HC	20.41	696.81	0.31	27.32	2.78	13.84	708.00	0.27	27.32	2.74
MA	49.10	483.30	0.26	31.50	2.44	42.06	495.08	0.21	31.50	2.40
AP	264.08	277.95	1.67	36.17	3.10	257.81	280.10	1.64	36.17	3.05

Table 2. Back-testing results of RSI indicator model for 30-minute data

	Transaction fee rate=0.00006					Transaction fee rate=0.00016				
	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio
PTA	30.0	528.32	0.23	26.50	2.88	23.1	726.82	-0.24	26.06	2.76
SR	-10.21	640.53	-0.02	26.91	2.68	-63.11	1091.74	-0.45	26.16	2.62
C	-12.99	521.88	-0.13	25.79	2.80	-77.89	1052.28	-0.91	25.79	2.46
M	-73.60	1080.59	-0.47	27.38	2.45	-141.23	1715.65	-0.95	27.05	2.33
FU	-241.50	2962.04	-1.45	25.25	2.12	-276.23	3268.70	-1.65	24.44	2.11
P	-33.74	659.14	-0.28	26.77	2.62	-82.59	1136.79	-0.75	26.57	2.48
ZN	41.02	547.74	0.34	28.71	2.58	-36.62	1041.64	-0.16	27.89	2.50
CU	82.76	327.90	0.75	29.74	2.57	10.62	423.93	0.24	28.41	2.55
RB	107.42	262.04	0.81	28.81	2.76	41.37	375.01	0.31	28.00	2.68
J	207.75	419.67	1.22	27.55	3.13	141.40	505.31	0.77	27.24	3.00
RM	-22.27	756.92	-0.15	26.78	2.68	-112.34	1200.48	-0.74	26.78	2.50
BU	-130.57	988.86	-0.64	24.50	2.78	-208.90	1333.16	-1.09	24.50	2.62
I	112.50	392.62	0.51	25.65	3.13	45.15	539.29	0.13	25.65	2.99
JD	-31.39	440.53	-0.17	26.47	2.68	-93.72	737.69	-0.62	25.19	2.68
PP	72.41	528.28	0.40	29.03	2.62	11.25	634.36	0.02	28.40	2.55
HC	11.43	611.72	0.15	27.70	2.63	-78.43	719.15	-0.38	27.18	2.53
MA	45.74	767.25	0.18	27.99	2.66	-46.57	1053.83	-0.37	27.87	2.51
AP	213.74	171.98	1.18	28.29	3.01	155.83	198.29	0.89	27.86	2.93

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maximum withdrawal has occurred at the very beginning, when no profit has been made, the calculation formula of the maximum withdrawal ratio in this paper is as formula 4.In addition, it is assumed that the initial funds are sufficient and can be traded continuously.

maximum withdrawal ratio = maximum reversion value / maximum funds used * 100% (4)

3.2 Empirical Results and Comparative Analysis

3.2.1 RSI Indicator Model

For the verification of RSI indicator model, 9 and 14 have been chosen as the parameters of RSI1 and RSI2 correspondingly. The back-testing results of 1-day and 30-minute data of 18 commodity futures are shown in Table 1 and Table 2.

In the empirical analysis of RSI indicator model, Lin took the trading data of main palm oil futures contracts from May 4, 2015 to November 27, 2015 for back testing, and the results are shown in Table 5. Comparing table 1 and table 2 with table 5 separately, it is found that the value of profit relative indicators such as annual return rate, winning rate in both table 1 and table 2 are lower than that in table 5, while the value of risk relative indicators such as maximum withdrawal ratio is higher than that in table 5. The results of our study are much worse than that of Lin. In addition, it is found that the results in 30-minute data are worse than that in 1-day data by comparing table 1 with table 2, that's because the increase of transaction frequency leads to a substantial increase in transaction fees, while the winning rate and average profit loss ratio are almost unchanged, which resulting in a decrease in return and an increase in risk. It can be sure that transaction cost has a great impact on model revenue.

3.2.2 CCI Indicator Model

14 is selected as the parameter value in the verification of CCI indicator model. The back-testing results of 1-day and 30-minute K-line data of 18 kinds of commodity futures are shown in Table 3 and Table 4.

In Lin's study, the empirical analysis of CCI indicator

Table 3. Back testing results of CCI index model for 1-day data

	Transaction fee rate=0.00006					Transaction fee rate=0.00016				
	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio
PTA	131.81	362.36	0.77	34.37	3.07	127.94	370.91	0.74	34.06	3.06
SR	23.99	368.57	0.08	31.09	2.44	19.10	381.92	0.04	30.77	2.42
C	15.94	430.57	0.14	35.31	2.03	10.38	474.37	0.07	35.31	1.96
M	19.69	405.04	0.07	32.67	3.73	14.18	429.20	0.04	31.82	2.24
FU	-18.07	797.42	-0.40	25.17	2.79	-22.79	843.17	-0.43	24.83	2.79
P	45.98	700.00	0.23	35.06	2.25	42.22	712.77	0.20	34.76	2.25
ZN	-6.92	707.71	-0.12	30.81	2.19	-11.77	748.30	-0.15	29.94	2.24
CU	71.99	574.15	0.39	35.50	2.35	67.44	586.61	0.36	35.50	2.31
RB	44.28	746.89	0.15	33.68	2.27	39.41	763.27	0.12	33.33	2.27
J	150.32	339.47	0.84	33.94	2.99	146.33	341.97	0.81	33.94	2.95
RM	34.48	463.05	0.13	36.20	1.97	29.51	472.08	0.10	36.20	1.94
BU	-46.16	860.96	-0.44	27.89	2.27	-51.57	875.90	-0.47	27.89	2.24
I	100.73	481.13	0.36	31.01	2.82	96.97	485.61	0.33	31.01	2.80
JD	76.12	248.95	0.50	33.95	2.48	70.52	250.44	0.46	32.72	2.57
PP	110.14	267.80	0.67	37.50	2.34	104.97	271.22	0.63	36.81	2.37
HC	-15.74	824.80	-0.07	35.17	1.77	-20.79	840.92	-0.10	35.17	1.74
MA	18.99	669.94	-0.01	31.08	2.33	13.75	681.20	-0.04	31.08	2.30
AP	72.53	354.20	0.48	46.88	1.35	68.39	357.37	0.46	43.75	1.52

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Table 4. Back testing results of CCI indicator model for 30-minute data

	Transaction fee rate=0.00006					Transaction fee rate=0.00016				
	annual return rate (%)	maximum with-drawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio	annual return rate (%)	maximum withdrawal ratio (%)	sharp ratio	winning ratio (%)	profit loss ratio
PTA	65.80	543.10	0.30	31.01	2.44	29.27	661.55	-0.02	30.28	2.40
SR	45.85	241.72	0.40	32.78	2.20	9.95	453.70	0.11	32.11	2.15
C	-2.37	376.10	-0.07	29.01	2.43	-46.86	716.93	-0.60	29.01	2.17
M	8.67	549.38	-0.03	31.72	2.18	-37.99	860.93	-0.36	30.78	2.15
FU	-78.32	1322.57	-0.58	29.17	2.11	-102.79	1539.13	-0.74	28.09	2.13
P	24.83	412.52	0.19	30.62	2.36	-8.90	456.72	-0.14	30.35	2.26
ZN	47.47	394.97	0.22	32.35	2.21	-4.41	703.03	-0.11	31.36	2.18
CU	113.57	260.22	0.81	33.55	2.30	63.18	386.07	0.43	31.78	2.33
RB	147.67	303.56	0.95	33.48	2.38	103.22	362.09	0.62	32.14	2.39
J	107.92	683.22	0.32	31.10	2.47	63.96	770.99	0.04	30.71	2.40
RM	-70.04	955.76	-0.52	29.46	2.23	-130.16	1222.50	-0.90	29.46	2.11
BU	-5.34	554.33	-0.19	28.65	2.48	-57.28	693.20	-0.50	28.65	2.35
I	111.40	606.46	0.38	31.57	2.38	67.81	664.00	0.13	31.57	2.29
JD	56.14	237.00	0.41	33.09	2.19	14.94	259.52	0.10	31.45	2.22
PP	52.06	716.47	0.24	32.72	2.18	9.95	806.12	-0.02	31.97	2.15
HC	32.43	549.23	0.25	32.78	2.11	25.80	702.18	-0.09	32.04	2.07
MA	-36.48	1133.82	-0.33	30.70	2.19	-98.11	1317.40	-0.69	30.70	2.08
AP	325.88	214.44	1.81	36.39	2.45	287.36	224.53	1.60	35.41	2.45

model is based on 1-day data of palm oil futures from June 1, 2015 to December 11, 2015. The results are shown in table 6. From table 3, it can be seen that the winning rate of CCI is only about 30% after increasing the number of varieties and the amount of back testing data, which is much lower than 50% as listed in table 6. In addition, although 14 of 18 varieties making profits, the maximum withdrawing ratio of all varieties exceeds 100%, which indicates that the varieties have lost all the principal during the trading period. Compared table 3 with table 4, it is found that the income and risk index values of CCI model in 30-minute data are worse than those of 1-day data, that's because the high transaction frequency leads to a substantial increase in transaction fees, while in the case of low winning rate and average profit loss ratio, the profit cannot fill the handling fees, resulting in a decrease in income and an increase in risk. In addition, table 3 and table 4 show that the annual return rate, maximum withdrawal ratio and other data of CCI model are significantly lower than listed in table 6 under the circumstance of increasing the back-testing futures varieties, data volume and deducting transaction cost.

Table 5. Test results of RSI model in palm oil futures

RSI indicator model	test result
Annual return rate (%)	184.61
maximum withdrawal ratio (%)	38.91
sharp ratio	7.74
winning ratio (%)	45
Average profit loss ratio	2.67

Table 6. Test results of CCI model in palm oil futures

CCI indicator model	test result
Annual return rate (%)	215.61
maximum withdrawal ratio (%)	42.18
sharp ratio	5.03
winning ratio (%)	50
Average profit loss ratio	3.01

4. Conclusion and Enlightenment

4.1 Main Conclusions

In this paper, data of 18 futures with the largest trading volume in Chinese futures market in recent 10 years are tested. Trading strategy writing and simulating are carried

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out through the software trade blazer v5.5.2 to further verify the sustainability of profitability and general applicability of the RSI and CCI indicator models under the consideration of transaction cost. The RSI model parameters are 9 and 14, and the CCI model parameter is 14. The conclusions are as follows:

(1) When deducting the transaction cost and increasing the amount of test data, both income index and risk index are worse than that in the research conclusion of Lin.

(2) The average winning rate of the two models in both 1-day and 30-minute data is just about 30%, which means that the prediction accuracy is not high.

(3) In terms of income and risk indexes, the results of 1-day data is better than that of 30-minute data. Because the high transaction frequency leads to a substantial increase in transaction fees, but due to the low winning rate and average profit loss ratio, profits do not increase correspondingly, resulting in a lower income and a higher risk.

(4) The back-testing results of 1-day data shows that most of the varieties can obtain profits, but the maximum withdrawal ratio is too large, there is a risk of exposure, indicating that the profitability of the model is time-varying, it's sustainability and general applicability is not good. In order to spread the risk, it is better to build a multi variety trading portfolio when using the RSI or CCI indicator model for trading.

4.2 Enlightenment

Over the years, many scholars have done a lot of empirical research on the predictability of technical indicator analysis in the financial market, the conclusions are obviously different. One reason for that maybe the non-uniform of test data. If the data used in the industry can be studied uniformly, it should be able to make a better and more accurate comparison of the benefits and risks level of different trade models and methods.

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ARTICLE

A Probe into the Oriented Management Mode of "Human Resource Return"

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ABSTRACT

At the present stage, each big enterprise bases itself on the human resource inside the enterprise, increases the human capital investment one after another, pays attention to the human capital investment and the talented person education and training. This paper analyzes how the return on human capital investment is realized in the enterprise and how the enterprise realizes the highest return on human capital investment.

1. Introduction

Return on investment is the basic criterion of capital market. The investment of human capital has been paid more and more attention by enterprise managers. Although there are different characteristics of human capital in different industries and different stages of history, and the investment of human capital is different in each enterprise, the common character of entrepreneur tries to reach the highest return rate of human capital investment.

2. Summary of Return on Human Capital Investment

Human capital return-oriented management is based on the value creativity of different businesses, different regions and different positions. By tilting resources to areas with higher returns on human capital, the total amount of labor in the network will remain unchanged. Achieve an increase in overall income. Compared with the planned management, the "human resource return" oriented management has the characteristics of refinement and flow, and is more in line with the inherent law of the development of "the key to the development of network business lies in the distribution of labor force". At the same time, the management system also put forward higher requirements.[1]

The key to a "human resources return" oriented management model is how to determine the value creation capabilities of the business sector in different regions. Below will be the example of personal deposits, which account for 70 percent of personal line income. This pa-

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per introduces the calculation method of human resource return on deposit, if necessary, it can be extended to other business research. Since the total amount of work time is basically fixed when the number of people is fixed and the working hours are fixed, the calculation of the "human resources return" will focus on calculating the savings income generated per minute by different jobs.[2]

Human capital is a form of capital that exists in contrast to material capital, acting on people and providing future income. Education is the most important way to form human capital. Education plays a continuous role in economic growth through the formation of human capital. Although human resource management experts and managers have different definitions of human capital, there is a consistent understanding that human capital represents the relationship between the investment made by an organization in its employees and the subsequent return on human capital. The return on investment in human capital, such as knowledge, talent, work experience, and physical condition of a company, is much higher than any other form of capital Ben's return on investment. Sustained growth for more than 100 months since the 1990 s was largely due to investment in human capital.[3]

However, human capital has its own characteristics, such as the dynamic role of human capital, the continuity of human capital investment, the non-transferability of human capital and the heterogeneity of human capital. Investment payback period growth, which foreshadowed increased risk of investment in human capital. Once human capital investment fails, enterprises lose not only the cost of investment (material and time cost), but also the opportunity cost of human capital to create value. Especially for the pure service industry where the enterprise value comes from the employees.[4]

In 2017, the human network carried out the "2016 Chinese Enterprise HR data (only report) research" activities, resulting in the 2016 economic operation Overall stable, the enterprise human capital investment rate of return showed an upward trend.

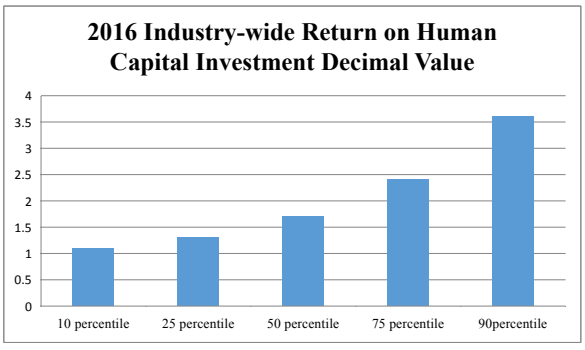

Figure 1. 2016 industry-wide return on human capital investment decimal value

3. The Advantages of "Human Resource Return" Management Model

3.1 The Business Does Tilt Towards High-Value Creation

ecause of the existence of external effect, especially for the business with strong external effect, such as channel type and financial management class, it is impossible to accurately judge the value created by a certain business by only calculating the book income. At present, in some areas of our company, there are too many resources being invested in the low value creation field, and it is very difficult for the plan management model to detect these situations and correct them. The management mode of "human resource return" calculates the internal and external value creation ability of each business, tilts the resources to the field of "human resource return" to realize the balance of the overall business development, and achieves the overall value creation maximization.[5]

3.2 The Development Path of Personality Network

The establishment of comprehensive business plan requires each bank, each organization to cover all aspects of the business, the lower bank in accordance with the plan to complete each business index, to their own comparative advantage of the business development. The management mode of "human resource return" gives the advantage business of each network itself, and through the performance appraisal system, it guides the resources to the high "human resource return" business of each network. It also leads individuals to create high "human resource returns" to maximize value creation.

3.3 Timeliness of Market Responses

When the business combination provided by the network does not match with the market demand, the business development of the network is in a sub-healthy state, that is, it misses the opportunities for the development of the superior business and invests too much resources in the inferior business. The traditional planning management can detect this situation only when the sub-health condition of the network is relatively serious, which is reflected in the fact that there is a large gap between the operating data and the brotherly network, and because the annual plan cannot be changed from day to day, from discovery to adjustment, the time is less than one year. More than 2-3 years. "Human Resource return" centralizes the processing of market information, which can be reflected in the data at the beginning of the departure from the network's business structure, and

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the whole information is touched. Feedback takes only a month or week to maximize dynamic value creation.

4. The Strategy of Realizing the Maximum Return on Human Capital Investment in Enterprises

4.1 Improve Enterprise Work Analysis

Job analysis is a systematic process of determining the skills, abilities, knowledge, tasks, responsibilities and responsibilities required to accomplish all tasks. It is also an important human resource management technique. The results of job analysis provide information about the requirements of the job itself, which in turn are the basis for the preparation of job descriptions and job specifications. The standardization of job analysis and systematization is helpful to avoid the invalid investment of human capital caused by the inappropriate employment of staff.

4.2 Establish a Sound Training System

Enterprise training involves two training subjects, enterprises and employees. According to the nature of the two, there is a certain difference in the purpose of their participation in the training. Therefore, in order to improve the efficiency of training, we must establish a complete training system to clarify the rights and obligations, interests and responsibilities of both sides, and to straighten out the interests of both sides so that the objectives and interests of both sides can be compatible as much as possible. The training system mainly includes: training service system, personnel training system, training incentive system, training assessment system, training reward and punishment system, training risk management system, training implementation management system, training file management system. Training fund management system and so on. As a result of training The training system is formulated by the enterprise so the main purpose of the system is to arouse the enthusiasm of the staff to participate in the training, to improve the quality of the staff, to improve the working efficiency, to make the training truly meet the needs of the production development of the enterprise and to create the future benefit for the enterprise.[6]

4.3 Improve the Evaluation System of Return on Investment of Human Capital

At present, the quantitative analysis of human capital investment has not been fully established, but there have been some research results in many aspects. Using reliable methods to calculate the return on investment of human capital requires comprehensive consideration of several factors. Four of these important factors include:

First, a systematic evaluation system. Determine the degree of assessment, data types, and methods of obtaining data.

Second, accurate process model. Provides steps to calculate the return on investment, including how to separate the economic impact of a human resources project from other factors.

Third, the standard of operation. As a guiding principle, these criteria ensure consistency in the evaluation process and build the confidence of the company's key stakeholders in the evaluation.

Fourth, sufficient resources should be prepared for the implementation of the evaluation to ensure the operability of the method of calculating the return on investment of the project, and to make the evaluation a routine task for the enterprise. The implementation of the project involves defining job responsibilities, policies, goals and skills development.

These four factors constitute the necessary conditions for the establishment of a comprehensive evaluation system which is balanced in all aspects, highly trusted by all stakeholders and easy to carry out many times. As a human resource manager, we should consider comprehensively from the strategic point of view, make use of the method of economics, carry out accounting and benefit evaluation, reduce the risk of human capital investment, and constantly perfect and standardize the quantitative analysis of human capital investment. To maximize the return on investment in human capital.

5. Attach Importance to the Investment of Human Capital of Entrepreneurial Talents

5.1 Entrepreneurial Personnel Training System with Entrepreneurship as the Core

In fact, the entrepreneurial talents should complete three tasks in the process of starting a business, one is to obtain and grasp the opportunity of starting a business for the first time, the other is to manage the operation of the new enterprise, and the third is to grasp the future strategic trend of the enterprise, to carry on the reform and the second venture. The corresponding entrepreneurial ability can also be divided into three types: entrepreneurial opportunity ability, entrepreneurial management ability and entrepreneurial transformation ability. The opportunity ability includes entrepreneurial awareness, entrepreneurial opportunity identification ability and entrepreneurial opportunity development ability. The ability of entrepreneurial management is the operation management of the new enterprise, including organization ability, relationship ability, commitment ability, while the ability of the second entrepreneurial transformation includes the strategic ability and the ability of change.

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It needs the joint efforts of the government, society, family and all kinds of schools to improve the entrepreneurial ability of entrepreneurial talents and form a scientific training system of entrepreneurial talents. In other words, the government should guide the government in macro policies, the society will form a cultural environment to encourage entrepreneurship, families will enhance their entrepreneurial opportunities, especially their entrepreneurial awareness, and all kinds of schools will comprehensively promote the entrepreneurial ability of entrepreneurial talents through a systematic entrepreneurship education system.

4.2 Optimizing Entrepreneurial Education System and Investment Channels of Human Capital

A reasonable and systematic entrepreneurship education system includes the effective linkage of entrepreneurship education in all kinds of formal education human capital investment and the construction of entrepreneurship education system in colleges and universities. The effective connection of entrepreneurship education in all kinds of schools is to define the function of entrepreneurship education in all kinds of schools. The function of entrepreneurship education in elementary and secondary schools is mainly to cultivate the entrepreneurial awareness in entrepreneurial opportunities, so that students can have a certain grasp of entrepreneurial management and entrepreneurial innovation ability. Vocational schools improve the ability of entrepreneurial operation and management in an all-round way. The goal of students' training is to meet the training standard of entrepreneurial executive talents, and the education of colleges and universities is to start a business. The core of this system is to cultivate entrepreneurial entrepreneurs and entrepreneurial R & D talents through professional education and curriculum education respectively. The education system of entrepreneurship can refer to the education and training system of entrepreneurship in the United States. Combining with the situation of our country, we can gradually set up the specialty of entrepreneurship in colleges and universities, and establish the system of specialized education and cultivation of specialty, master and doctor. Define the educational goal of entrepreneurship, carry out educational quality project, improve the quality of entrepreneurial talents, and standardize the framework of education system. Establishing a systematic course on Entrepreneurship not only for Entrepreneurial majors, but also for developing some Non-Oriented courses based on Entrepreneurship ability Promotion A course in entrepreneurship. Course carriers include books, case studies, online games, television, comprehensive training, etc. Employ entrepreneurs and entrepreneurs with entrepreneurial experience as part-time teachers and provide students with entrepreneurial experience opportunities. On the basis of the optimization of the investment in human capital of formal education, the optimization of pre-school education, the investment of human capital in adult continuing education, the investment in health care and the optimization of entrepreneurial talent market.

According to Heckman (2009), a Nobel laureate in economics, the investment of human capital in pre-school education aged 0-5 is the most efficient. Therefore, in preschool education, the government should strengthen the guidance of entrepreneurial culture and entrepreneurial climate. For entrepreneurial talents to set up a learning model, families to strengthen pre-school education awareness of entrepreneurship and entrepreneurial thinking training. Basic education, vocational education and higher education and other formal education investment channels to form a systematic entrepreneurship education system here do not elaborate. Investment in continuing adult education or on-the-job training, as well as investment in health care, can establish an organizational and entrepreneurial individual sharing of inputs and benefits Mechanism, through on-the-job education and medical care to extend the service life of entrepreneurial human capital, to renew entrepreneurial ability, to enhance the ability of secondary entrepreneurship, but also for the long-term development of the organization to provide competitive advantage, create value. The optimization of entrepreneurial talent market is mainly to form a free circulation of entrepreneurial talent market, promote the function of market intermediary organizations, and promote the effective allocation of human capital and the promotion of talent allocation efficiency. At the same time, it also promotes the value of individual human capital.

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ARTICLE

The Research of Walmart Global Expansion

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ABSTRACT

Purpose: To entering into the international market successfully, the company ought to do all-round and in-depth research. This paper aims to study the process of Walmart's global expansion and find the solutions to solve the relevant risks. Design/Methodology/Approach: In-depth interviews with 5 persons were conducted to collect their rankings of social media sites and the reasons for visiting each of the sites.

1. Introduction

When speaking of hypermarkets, many people would think of Walmart, the largest company by revenue and the largest private employer in the world. Actually, the success of Walmart, to a great extent, is due to its excellent globalization strategy, which also makes Walmart born again when its opportunities for growth in the United States getting much more restricted.

1.1 SWOT Analysis

The SWOT analysis is shown in Figure 1.

1.2 The Strategy the Walmart Applied in International Markets

Today, the expansion of Walmart is no longer the copy of American model, it differentiates the product offering across geographic markets to account for local differences, and foster a multidirectional flow of skills between different subsidiaries in the firm's global network of operations. Also, Walmart is a low-price discount retailer, low price of products is its advantage. Transnational strategy helps it simultaneously achieve low costs through location economies, economies of scale, and learning effects.

2. The Benefits in the Walmart International Expansion

Admittedly, the international expansion brings a lot of benefits for Walmart.

First, globalization reduces the marketing costs for the Walmart as it standardizes the certain marketing strategy in its retailing markets. Walmart can make a piece of identical advertisement for its promotion month and then simply translating ads into local languages in each market, for which each market shares the promotion fees.

Second, the international expansion brings Walmart

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Table 1. SWOT Analysis

Strength	Weakness
● Adequate financial resources - one of the first companies to promote widespread stock ownership among employees ● Good corporate image ● Strong technical force -a combination of efficient merchandising, buying power, and human relations policies -a leader in the implementation of information systems to track product sales and inventory -developed one of the most efficient distribution systems in the world ● Economies of scale ● Significant marketing share	● Management shortcomings -poor control of subsidiaries due to the globalization ● Bad competitive power -bad price competitiveness -quality problems
Opportunity	**Threat**
● New market and need ● Removing market barriers with other countries	● Competitors -strong competitors such as Carrefour of France, Ahold of Holland, and Tesco from the United Kingdom - rapid development of e-commerce platform ● Difficult marketing expansion -the practice protectionism of Local governments -difficult to match local people's consuming habits and lifestyles ● Economic recession

more new market opportunities when the retailing market in the united states becomes saturate. In fact, by 1990, it was hard for Walmart to gain a qualitative leap in its home market. But managing an enterprise is like rowing against the current, no progress means backwards. And for Walmart, the expansion not only breaks it dilemma, but also helps Walmart gain significant market share in global general merchandising. As of July 31, 2019, Walmart has 11,389 stores and clubs in 27 countries, operating under 55 different names[1].

Third, globalization of markets helps level uneven income streams. By supplementing domestic sales with international sales, the company can reduce or eliminate wide variations in sales between seasons and steady its cash flow (John J. et al., 2019). When entering a new market, it is a common case that the subsidiaries or joint ventures don't balance. However, globalization of markets helps narrow or even remove the bad effect on companies' accounts for the income from other mature subsidiaries.

Forth, identifying and serving the local buyers needs would reveal potential benefits of global markets for Walmart. The entry to other markets, especially some regions have an entirely different culture, beliefs, customer and tradition, may hold back through a standardized global marketing strategy. So, it is crucial to do small modifications to better suit local tastes when entering into other markets. During the process of entering into the Asian market, Walmart signed the purchase-and-sale agreement for low-price products to provide great discount for customers which catered to the relatively low purchasing power of Asians. Obviously, this move helps Walmart open the Asian market and gains the market share gradually.

Last but not least, it is more beneficial for the development of global sustainability in the global market. Actually, not only the material resources can be recycled but also ideals can flow around the world.

3. The Risks When Entering Other Markets and Relevant Solutions

3.1 The Relevant Risks for Walmart When Entering Other Retailing Markets

Although Walmart owns many competitive advantages, it meets many risks for Walmart when entering other retailing markets.

First, it is difficult for Walmart to replicate its efficient distribution system in other countries, especially some developing countries with poor infrastructure, crowded roads. All above increases logistics cost and diminishes the advantage of the distribution system.

Second, it exists potential risk when selecting and cooperating with local suppliers including logistics problem, stocking problems and so on. Thus, the price of the products sometimes losses the advantages comparing with local retailers.

Third, there were also problems with merchandise selection. People in different regions usually owns entirely different consuming habits and lifestyles. Because different cultures breed the different values, attitudes and be-

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haviors. Walmart would face plenty of stocking if it makes mistakes with merchandise selection.

Forth, some government would protect their local industries and publish strict rules for foreign companies. So, Walmart would meet big fines for its ignorance of regional rules.

2.2 How to Mitigate These Risks and Create More Values?

To mitigate the above risks and create move values, Walmart ought to bring out its strengths to make up for its weaknesses.

It is a must to refuse mechanically replicating its efficient distribution system. Walmart ought to do research with the infrastructure and traffic situation before open a new store. If the country has poor environment, Walmart ought to make a modification with the information and distribution system according to the local retailers' operation.

In fact, entering a new market via a joint venture could reduce risk. It is more effective for the local partner to select suppliers, as they have more experience and are familiar with the process of business. Also, they are much more familiar with the market including consumer preferences, popular products and so on.

Last but not least, comply with the rules that local government published, although it is sometimes unfair for foreign companies. In short term, Walmart could not expand market share and make large profits. But in long term, with the mild negotiation with local government, Walmart could develop its business rapidly as the restriction is gradually removed.

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ARTICLE

Analysis and Forecast of Urban Economic Vitality in Northeast China

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ABSTRACT

Taking into account the passage of time, the original economic vitality index will vary with changes in social development, we use the BP neural network nearly a decade as the original GDP data for the next 30 years the GDP forecast. BP neural network in 1985, proposed by Rumelhart, the algorithm solves the system of learning problems multilayer neural network connection weights hidden layer [1].It consists of an input layer, a hidden layer, and an output layer. The principle is to continuously adjust the network weights and thresholds by transmitting errors backward and then correcting the errors to achieve the desired input-output mapping.

1. Analysis of Regional Economic Vitality in Northeast China

This paper mainly uses the analytic hierarchy process (AHP) to determine the weight of each indicator. The process is as follows:

1.1 Establishing a Hierarchical Structure of the Factors Affecting Regional Economic Vitality

According to different attributes, the related factors are decomposed into several layers from top to bottom[2]. The next layer of factors affects the upper layer of factors and the upper layer of factors dominates the next layer of factors. The target layer is the uppermost factor, and there is only the analysis of regional economic vitality is the only factor. The middle layer is usually the indicator layer or the criterion layer, including 7 first-level indicators, and the lowest layer is the object layer or the program layer, including 17 second-level guarantees.[3] The specific hierarchical structure is shown in the following figure:

1.2 Construct a Judgment Matrix and Assign a Value

From the hierarchical structure obtained from the above table, we construct a judgment matrix.[3] The specific method of constructing the judgment matrix is as follows: The element of the criterion layer is taken as the first element of the judgment matrix, and the elements belonging

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to it are arranged in the first row and the first column, respectively. The judgment matrix refers to the opinions of multiple related professional teachers and students.[4]

The level indicators and secondary indicators integrated with the results shown in Table 1:

Table 1. HP results

Primary indicator	Consistency ratio	Weight to the overall goal	Lower level index	The weight of the lower layer to the upper layer	The weight of the lower layer to the overall goal
Economic vigor	0.0081	0.3095	Macroeconomic vitality	0.1567	0.0485
			External economic vitality	0.0882	0.273
			Enterprise economic vitality	0.2717	0.0841
			Per capita economic vitality	0.4830	0.1495
High-tech industrial environment	0.0000	0.3095	Vitality of high-tech industry	0.5000	0.1547
			Industrial agglomeration ability	0.5000	0.1574
Innovation environment	0.0015	0.1885	Innovation support capacity	0.0817	0.0154
			Innovation investment	0.6817	0.1285
			Innovative output capacity	0.2366	0.0446
Policy environment	0.0000	0.0659	Science and technology industry policy	0.8741	0.0576
			Tax policy	0.1244	0.0082
Financial environment	0.0000	0.0296	Degree of activity of property right transaction	0.3338	0.0233
			The degree of perfection of the financial service system	0.6662	0.0465
Humanistic environment	0.0000	0.0274	Interest incentive motive force	0.7976	0.0236
			Risk bearing ability	0.1993	0.0039

Above table shows that the consistency of the matrix is determined ratio is less than 0.10, to meet the requirements of the AHP index system.

According to the analysis of the first-level indicators, the high-tech industry environment and economic environment score the highest[5];Analysis of secondary indicators shows that under the two indicators of high-tech industry and economic environment are:Vibrant high-tech industry and industrial clustering ability score (0.1574) up.

The top five indicators of a greater impact on the economic vitality of the Northeast region are: policy environment, financial environment, innovation and the environment, economic environment and high-tech industrial environment, and that under the two indicators are the top eight secondary indicators, therefore, we will mainly discuss the analysis of level indicators.

1.3 High-Tech Industry Environment

High-tech industry is a source of power to stimulate economic vitality of the region, in the information era of knowledge economy, technology with its own unique value multiplier effect, to have a good ability to attract capital, the future trend of the market depend on the development of transformational technologies that will resulting in attractive technology for enhanced investment. Capital is the key factor that stimulates the vitality of the regional economy, and any capital is profit-oriented, and most high-tech industries have high returns[6].

High-tech industrial environment by high-tech industry cluster capacity and high-tech industry to describe the vitality. We use the value-added of industrial enterprises above designated size, number and share of high-tech development zone of high-tech industry to consider, as well as the percentage change in the internal structure of its own high-tech industries have a more important impact on regional economic vitality in the regional economy[7].

1.4 Economic Environment

Macroeconomic environment and regional economic vitality influence each other, touch each other. Research results indicate that the gross domestic product, the correlation coefficient between the amount of venture capital and new final consumption exceeds 0.5, relevant, so the economic environment has a great impact on regional economic vitality.

Economic environment mainly portrayed by per capita economic vitality and economic viability of the enterprise, foreign economic vitality and macro-economic vitality; macroeconomic ability to reflect the total economic potential for regional economic development of the product as well as residents, we mainly use the average growth rate of the gross production of the Northeast region for nearly 10 years; foreign economic vitality of the region reflects the ability to participate in international trade and investment to accept, mainly exports and foreign investment in Northeast China over the past decade to describe; companies can promote economic vitality and competitiveness of enterprises enterprise development; per capita economic vitality refers to the average affluence inhabitants of the region, we mainly use the average growth rate of nearly

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10 years in Northeast China's GDP to represent.

1.5 Innovation Environment

Innovation is the lifeblood of the development of regional economy, regional economic vitality is usually accompanied by commercial and industrial innovations[8].

Innovation input, innovation output capacity and ability to support innovation plays a decisive role in the environment of innovation, investment in innovation directly affects the size of the size of innovation capacity; productive capacity of innovation is the embodiment of technology transformation capabilities, is a concentrated expression of the economic vitality of regional innovation.

1.6 Policy Environment

Particularity of regional economic vitality of the policy decision, although the vitality of the regional economy is a market behavior in nature, but the dynamic excitation is inseparable from the support and good macro environment[9].Policy support is mainly reflected in tax policy, policy support greatly affect investors' expectations for earnings, if not a good policy environment, investors will not invest capital in high technology venture capital projects, will affect the region Regional economic vitality[10].

1.7 Human Environment

People of the region to the value orientation and the ability to accept new things with the development of regional economic vitality of certain influence within the region it is easy to accept new things, freedom of spirit. Higher operating efficiency will effectively promote the development of regional economic dynamism.

2. City Economic Vitality Forecast

Step 1: Initialization. Environmental degradation due to the different dimensions of cost data, normalizes here.

Step 2: Entering the loop, calculates the input hidden layer and output layer, the output value.

$$s_j^k = \sum_{i=1}^{n} a_i^k w_{ij} - \theta_j \quad , \quad b_j^k = \frac{1}{1+e^{-s_j^k}} \quad , \quad j = 1,2,...,p$$

$$l_j^k = \sum_{j=1}^{p} b_j^k v_{it} \quad , \quad c_l^k = \frac{1}{1+e^{-l_t^k}} \quad , \quad t = 1,2,...,q$$

Step 3: Reverse transfer error. Adjust each of the connection layer and the threshold value in accordance with the gradient descent method[11].

$$E_k = \sum_{t=1}^{q} \frac{(y_t^k - c_t^k)^2}{2}$$

Step 4: Corrected weights and thresholds. Use the error of each node of the output layer and the hidden layer to modify the connection weight and threshold of each layer.

$$v_{jt}(N+1) = v_{jt}(N) + \alpha d_t^k b_j^k$$
$$\gamma_t(N+1) = \gamma_t(N) - \alpha d_t^k$$
$$w_{ij}(N+1) = w_{ij}(N) + \beta h_j^k a_i^k$$
$$\theta_j(N+1) = \theta_j(N) - \beta h_j^k$$

However, the weights can BP algorithm converge to a certain value, but does not guarantee that the global minimum of the error plane, because the gradient descent method may produce a local minimum. For this problem, we use genetic algorithm optimization BP neural network weights and thresholds[12].The specific process is as follows:

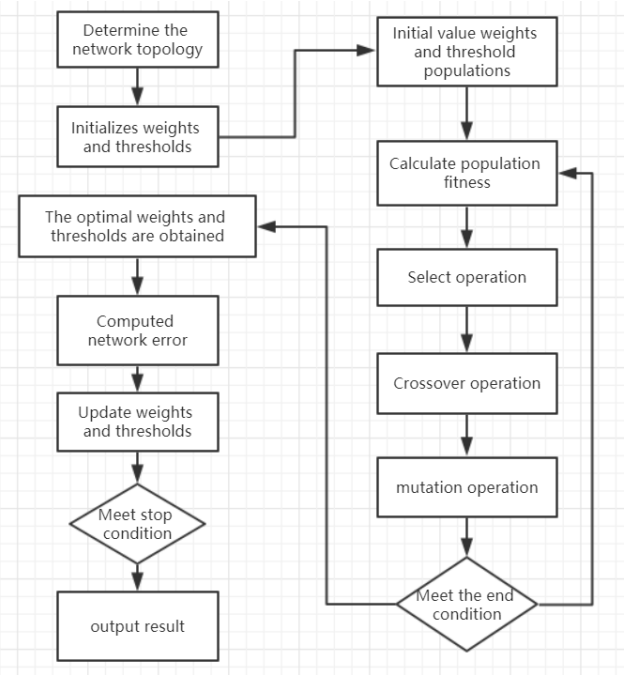

Figure 1. Prediction Model Flowchart

Based on genetic algorithm, BP neural network is used for prediction. The sample size is 50, the cross probability is 0.1, and the maximum evolution algebra is 100. According to the characteristics of the S-shaped function, which is slightly and non-linear, the S-shaped function is selected as the activation function, and Trainlm as a training function[13]. From the China Statistical Yearbook, we have found the GDP of the past 20 years, using it as the raw

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data, input the BP neural network for training and testing. The simulation results are shown in the figure below.

Table 2. GDP of Heilongjiang Province in the past ten years

Year	2008	2009	2010	2011	2012	2013	2014	2016	2017	2018
Total GDP	0.85	1.04	1.26	1.37	1.45	1.50	1.51	1.54	1.59	1.64

Table 3. GDP of Jilin Province in the past ten years

Year	2008	2009	2010	2011	2012	2013	2014	2016	2017	2018
Total GDP	0.73	0.86	1.06	1.19	1.30	1.38	1.41	1.48	1.49	1.51

Table 4. GDP of Liaoning Province in the past ten years

Year	2008	2009	2010	2011	2012	2013	2014	2016	2017	2018
Total GDP	1.52	1.85	2.22	2.48	2.72	2.86	2.87	2.22	2.34	2.53

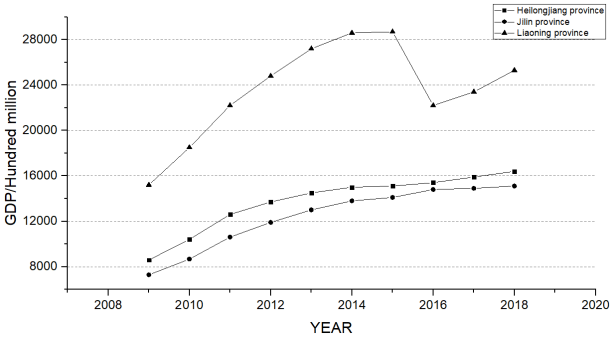

Figure 2. Trend map of the total GDP of the three provinces in Northeast China

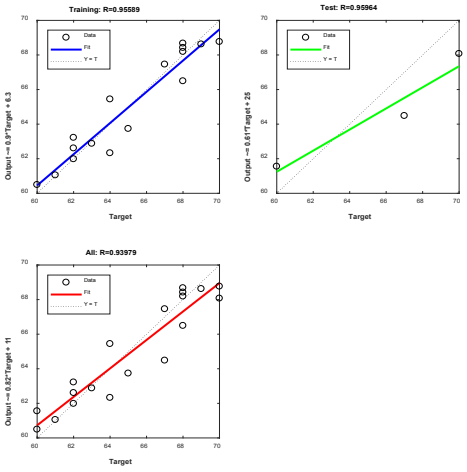

Figure 3. GDP error graph

From Chart 3-10 to see that most of the data distribution in the vicinity of a straight line, can explain the accuracy of the forecasts, GDP varied linearly over time, predict that in 2050 the northeastern region GDP will reach 100 trillion by the international market and government impact of regulation which is obviously impossible. Therefore, we introduce a new prediction model[14].

$$\begin{cases} \dfrac{df}{dt} = af(\mathrm{t}) - \mathrm{b}f(\mathrm{t})^2 \\ \displaystyle\int_{f_0}^{f} \frac{dr}{ar - br^2} = \int_{t_0}^{t} ds = t - t_0 \end{cases}$$

Where is the number of population, is the total initial GDP, and a and b are constants greater than 0. Solving the equation through the mathematical program, we can get:

$$f(\mathrm{t}) = \frac{af_0}{bf_0 + (a - bf_0)\,\mathrm{e}^{-at(t-t_0)}}$$

Obviously there

$$\lim_{t\to\infty} p(\mathrm{t}) = \frac{a}{b}$$

Using MATLAB to make the image of formula (10), as shown in Chart 3-6, the real GDP growth should be an "S" curve. GDP is accelerating before a / 2b. When it reaches a / 2b, due to environmental factors, the growth rate will decrease. When the time is long enough, the GDP growth rate will tend to 0, and the total GDP will be in a dynamic and stable situation

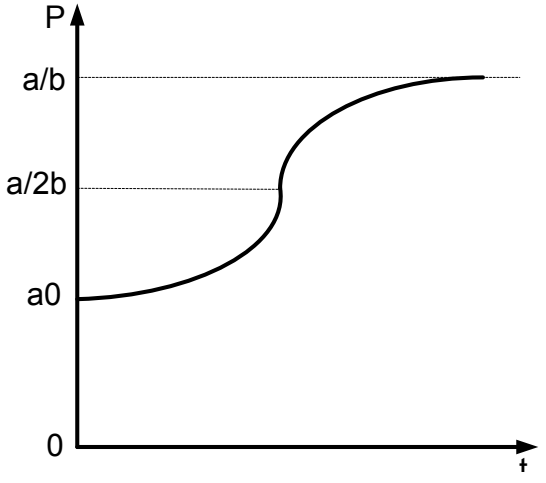

Figure 4. Model of economic vitality growth

To sum up, the next three decades, economic development vitality Liaoning Province continued to hold first

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place, followed by Jilin, Heilongjiang Province will continue for a long time at the stage of economic development vitality weaker. However, there are many uncontrollable factors in the vitality of regional economic development, such as policy tendencies and resource exploration, so it is impossible to make decisive predictions.

3. Recommendation Letter on Regional Economic Development

3.1 Research Investment

Investment plays an important role in the promotion to enhance regional economic vitality, however, rely solely on the number of push to increase investment to enhance regional economic vitality of the Northeast is unrealistic, according to the diminishing marginal productivity of factors of production rules, with the region's economic vitality will As the amount of investment decreases, the increase in GDP will also decrease. Therefore, it is unrealistic to rely on the amount of investment to promote the improvement of regional economic vitality. The Northeast should invest limited funds in high-tech industrial projects to stimulate the economic vitality of the Northeast.

In terms of the financial system, the government and financial institutions are still the mainstay of China's investment. To enhance the vitality of regional economic development, the size of financial institutions in the Northeast should be expanded, and financial institutions should also increase their support for high-tech enterprises. Appropriately reduce the difficulty of establishing financial institutions and vigorously develop regional development banks and policy bank branches.[18] Decrease the statutory reserve ratio of commercial banks and increase the liquidity of funds, thereby enhancing regional economic vitality. The number and quality of scientific research personnel have a huge effect on the promotion of economic vitality. It is impossible to maintain the vitality of economic development by only the number of scientific research personnel. Northeast China must rely on local colleges and universities, focus on the quality of scientific research personnel, and cultivate a group of high-quality talents. Teams to play a demonstration effect and enhance the economic vitality of Northeast China.

3.2 Aspects of Individual and Private Enterprises

The self-employed can effectively enhance the economic development of the vitality of the Northeast, but the Northeast region of the self-employed and private enterprises started late, there is a wide gap with the developed areas in terms of scale, management, and funding. Therefore, the Northeast region should increase its support for self-employed and private enterprises, and encourage them to become bigger and stronger.[19] At the same time, the main businesses of self-employed and private enterprises in the Northeast are mainly low-end service industries, and the government should guide them to optimize their structures and upgrade their industries. In terms of private enterprises, Liaoning Province should pay attention to e-commerce, finance modern, intelligent manufacturing, new energy industry, textiles and clothing and other fields; Jilin Province should pay attention to the cultural and creative, healthy retirement, automobile spare parts, special resources and deep processing of agricultural areas; Heilongjiang Province We should pay attention to eco-tourism, modern logistics, processing of agricultural products, bio-pharmaceuticals and forest economy and other fields.

3.3 Government and Industry Structure

Government consumption play a stimulating role in enhancing economic vitality of the region. From 1954 to 2018, the proportion of government consumption in the Northeast increased from 4% to 58%. It is difficult to rely on government consumption alone to promote economic vitality. The government needs to carefully consider the efficiency and effectiveness of capital use.Excessive government intervention in the economy will lead to the weakening economic vitality, the government should adopt local administrative reform, in the form of legislation will be the responsibility of local government and intelligence explicitly create a favorable investment environment and attracting foreign investment, others are left to the market Make self-regulation[15].

Industrial layout, the Northeast should, with its strong industrial base, relying on Northeast Asian cooperation platform, strengthen capital introduction, technology transfer and cooperative development, making the automotive, machinery manufacturing, agro-processing and petrochemical and other traditional pillar industries to electric vehicles, high-precision pointed machinery manufacturing, high-end food processing and specialty chemicals direction of upgrading the industrial structure, and gradually form their own complete industrial chain, the formation of industrial clusters[16]; support new materials, bio-pharmaceuticals, optoelectronics information emerging enterprises, the introduction of large environmental technology and environmental protection industry, the establishment of high value-added, low pollution, low energy consumption of a modern industrial clusters. In terms of logistics transportation, relying on the trunk lines such as the China-Munda Corridor, the Harbin-Dalian Line,

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and the East Side Road, a modern integrated logistics system connecting Northeast Asia. In the service industry, we should vigorously develop modern service industries such as cultural creativity, service outsourcing, and financial insurance[17].

3.4 Import and Export

Exports have positive effects to enhance the economic vitality of the Northeast. At present, the export of Northeast China is dominated by environmental and resource consumption, and its ability to pull regional economic vitality is limited. Therefore, the Northeast should be changed to raw materials and low-end products as the main export product model, to develop exports of automobile, petrochemical Seiko, bio-pharmaceuticals, agricultural products and other high-end products. At the same time, economic growth in developed countries better, are subject experienced capital, Northeast China should actively introduce foreign capital to further increase the introduction and use of overseas funds, so as to enhance regional economic vitality[18].

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ARTICLE

Investor Sentiment and Cross-Sectional Return after Share Issuance: Evidence from Seasonal Equity Offering in China Market

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ABSTRACT

Our research on private placement of equity on China capital market reveals that firms prefer to equity financing when their stock price is overvalued and investor sentiment is high, following the market timing hypothesis. However, after private issuance, we document a significant positive abnormal return within three years. We believe firms choose to polish their financial statement before the exit of institutional investors and controlling shareholders. Through manipulation of discretional accruals, firms improve the profitability and market valuation, and help institutional investors and controlling shareholders obtain the abnormal return after private placement of equity. Nevertheless, such manipulation cannot be sustained and will do harm to other investors in the long-term.

1. Introduction

The debate of relation between firm's equity financing activities, including seasonal equity offering (SEO), stock merger, stock repurchase, etc., and its capital market performance exists in academia as well as industry for a long time. Numerous of literature summarizes the mispricing story behind equity issuance, but in different directions. Some scholars argue the market timing hypothesis stating that firms prefer to equity financing when it is overvalued. A CEO survey by Graham and Harvey (2001) shows that valuation of the firm has an important impact on equity financing decision-making process. After the examination of capital structure and market value, Baker and Wurgler (2002) show that firms tend to issue equity instead of debt when market value is high and tend to repurchase equity when market value is low. Moreover, Loughran and Ritter (1995, 1997) , McLean, Pontiff, and Watanabe (2009) suggests a negative abnormal return after equity issuance, which is similar in a stock merger scenario (Loughran and Vijh (1997)), while Ikenberry, Lakonishok, and Vermaelen (1995, 2000) argue a positive long term stock performance after announcement of stock repurchase. Pontiff and Woodgate (2008) find out that share issuance is strongly negatively related to share issuance measures, using both Stephens and Weisbach (1998) and Daniel and Titman (2006) methods, so that SEO, stock merger and stock repurchase have return predict power and support the market timing hypothesis.

On the other hand, some scholars try to explain

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cross-sectional stock return by investor sentiment theory. Unlike classical finance theory, investor sentiment regards investors' irrationality as a risk factor which may have significant impact on stock cross-sectional return. Baker and Wurgler (2006) find out that a broad range of market sentiment measures have significant effects on the cross-section of stock prices. Since there is no definitive or uncontroversial measure of sentiment, they construct a composite index of sentiment (Baker and Wurgler Sentiment Index) that is based on the common variation in six underlying proxies for sentiment: the closed-end fund discount, NYSE share turnover, the number and average first-day returns on IPOs, the equity share in new issues, and the dividend premium. McLean and Zhao (2014) use their approach and argue that investor sentiment affects external financing decision and its cost.

Inspired by them, in this paper, we are trying to investigate the logic beneath the share issuance activity, especially SEO, in China market. The market timing hypothesis of equity issuance is based upon three assumptions: Firstly, there exists information asymmetry between the firm and outside investors; Secondly, at least some outside investors are not aware of firm's willingness and ability to benefit from information advantage; Thirdly, outside investors who understand the information asymmetry are constrained in arbitrage. After the examination on China stock market from 2006 to 2019 using Pontiff and Woodgate (2008) approach and Fama-Macbeth (1973) regression, we notice that equity issuance, together with market return, momentum and controlling shareholders' participation, is positively and significantly related to cross-sectional performance of stock, especially in a long-term sense, which is inconsistent with what we find in the U.S. market. We also have a test on SEO pricing process through issuance discount and the result of it reveals that outside investors seem to be aware of the information asymmetry and want to be compensated by issuer.

The contradiction of assumptions on market timing hypothesis leads us to connect equity issuance and stock return performance from the sense of investor sentiment. It affects the market through investors' general attitude and behavioral pattern. Among the numerous investor sentiment measures, market turnover has a strong and positive predict power to future cross-sectional after SEO. Our test result indicates that the explanatory power of investor sentiment on the variation of return performance dominates that of share issuance, showing an irrefutable impact on equity issuance decision-making. A further test reveals that market turnover is also a good proxy for future share issuance, even better than fundamental variables.

Our paper contributes at least in three aspects. Firstly, our paper disputes the market timing hypothesis with data from China and challenges the reliability of investor's naivety to information asymmetry with issuance pricing process. Secondly, besides of the finding that the explanatory power of investor sentiment outweighs that of past share issuance, it is also a better indicator of future share issuance, leaving investor sentiment to a good risk factor. Thirdly, our empirical findings comply with the impact of investor sentiment on both corporate finance and asset pricing model through its predictability on equity issuance and return performance.

The rest of this paper is organized as follows. Section II describes the sample selection and variable construction of our study, followed by Section III with summary statistics. We test on the return predictability of share issuance in Section IV and influential factors of return performance in SEO event in In Section V. Section VI presents the dispute of market timing hypothesis with regression on issuance discount. Then we focus on investor sentiment and discuss the predict power on future return in Section VII and its indication on future equity issuance in Section VIII. Section IX is the conclusion.

2. Data Description

2.1 Sample

China stock market was established in late 1990, remarked by the foundation of Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE). Annual financial statement and monthly stock performance data is draw from CSMAR, a wildly used financial database, for all public firms, including those delisted or acquired by other firms, from 2006 to 2019. We retain the firms with non-missing return entries and have been in the database for at least 6 months to computing the previous 6-month returns as momentum proxy. For each firm, we assign the annual financial statement data of last year after April to each firm-month observations, due to disclosure requirements by China Securities Regulatory Commission (CSRC). This leaves us 237,461 firm-month observations in total.

Fama and French (2005) state that equity financing activities include share repurchase, SEOs, stock mergers, and share issuance through executive compensation, conversion of convertible debt, and warrant exercise. Compared with those in developed countries, China stock market is quite young and experiences a wave of regulation changes in policy. In early age of China capital market, IPO was the main player in equity financing and SEO was

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not active. To mitigate the volatiles, SEO issue sample is draw from Wind and covers SEO data since 2006 when it was generally accepted as a main approach as equity financing. We have 4,035 SEO observations in the sample from 2006 to 2019.

2.2 ISSUE

We use Pontiff and Woodgate (2008) method to construct share issuance variable ISSUE for each company. Firstly, we obtain the number of shares outstanding of each listed firm from CSMAR database and then adjust for stock splits and stock dividends. Thus, annual share issuance variable at time t is computed as the logged difference of adjusted number of shares outstanding as

$$ISSUE_{t,t-11} = Ln(Adjusted\ Shares_t) - Ln(Adjusted\ Shares_{t-11})$$

A positive figure of $ISSUE_{t,t-11}$ represent a stock issuance within that year while a negative figure appears when there is a stock repurchase.

In our regression model, we also try some other time intervals, such as 6-month and 3-year share issuance variables. We choose 1-year interval as audited financial statement data are required to release annually, which also corresponded to market capitalization and book-to-market value measure introduced by Fama and French (1992). 6-month share issuance variables evaluate relatively short-term effect of share issuance and match the momentum proxy we construct as previous 6-month return. 3-year share issuance variables evaluate relative long-term effect of share issuance and match the minimum holding period of controlling shareholders who participate in SEO.

2.3 B/M

We use the annual financial statement reported book value data to construct book-to-market variable B/M of each firm. Fama and French (1992) procedure compute the book value of firm at the end June of each year, but we do it at April of each year since financial statements are available at that time for all public firms. We assign financial statement data of previous financial year, including book value, to each month from April to March of next year. Book value then is divided by market value of the firm on December of previous year, giving us B/M.

2.4 SIZE

We calculate the monthly market value by multiplying assigned number of shares outstanding with month-end stock price. SIZE is the natural logarithm of monthly market value of the firm.

2.5 MOM

We use previous 6-month holding period return as momentum proxy (Jegadeesh and Titman (1993)). MOM is lagged by 1 month due to return synchronicity.

2.6 Returns

Month stock performance data as well as the market return data are draw from CSMAR. If return data is missing for certain month, we ignore it. The dependent variable in our model is the 6-month, 1-year and 3-year holding period return. 6-month holding period return represents the return one will receive from holding the stock for a relatively short investment horizon. We choose 1-year holding period return to measure a relatively long investment horizon, which also correspond to the minimum holding period for institutional investors who participate in SEO and have no connection to controlling shareholders. 3-year holding period return matches the minimum holding period of controlling shareholders who participate in SEO. We also have the equal-weighted market return with dividend reinvestment for all SHSE-listed firms, denoted as EWRET, as well as HS300 index return, donated as RETHS300.

2.7 ISSUE_VOL, ISSUE_MV

We obtain the SEO events data from Jan 2006 to Dec 2019 from Wind. Some events involve both seasonal offering and stock merger, and we do not distinguish them in our regression. ISSUE_VOL is the number of shares issued disclosed in SEO announcement and ISSUE_MV is the market value of shares issued in CNY.

2.8 Discount

With data from Wind and disclosure announcement, we compute the discount on issuance as to the close price of last trading day before issuance. Most of them are positive, suggesting a price discount for the investors. But in some scenarios, there exists issuance premium when the issuer is popular or the SEO market is active.

2.9 Controlling Shareholders (CS), Controlling Shareholders Percent (CSP)

Controlling Shareholder (CS) is a dummy variable set to one if the controlling shareholders participate in SEO, and zero otherwise. Controlling Shareholders Percent (CSP) is the portion of shares purchased by controlling shareholders. We construct the variable based on the public

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information from Wind and disclosure announcement and cannot rule out the cases that some controlling shareholders might take part in the SEO under cover trough some other investors.

2.10 SOE

It is a dummy variable set to one if the issuer is a state-owned enterprise, and zero otherwise. The classification is based on the ultimate shareholders of the firm. We do not specific them as central government owned firms or local government owned firms.

2.11 ISSUE_PCT

ISSUE_PCT is the proportion of equity issued as to firm's market value at the end of last month. Market value of issuance is obtained from Wind and disclosure announcement.

2.12 Market Turnover (MKT_TR)

Monthly market turnover (MKT_TR) is computed as total transaction value divided by the total market capitalization at the end of each month, averaging by number of trading days in that month. Data is draw from CSMAR.

2.13 Capital Expenditure Ratio (CapEx)

Capital expenditure ratio (CapEx) is computed as capital expenditure over net value of property, plant and equipment (PPE) measured at the end of last financial year. It reveals firm's extent on capital expansion and investment. Data is draw from CSMAR.

2.14 Net Profit Margin (NPM)

Net profit margin (NPM) is computed as net income over total revenue measured at the end of last financial year. It reveals firm's ability to generate profit. Data is draw from CSMAR.

2.15 Return on Equity (ROE)

Return on equity (ROE) is computed as net income over book value of equity measured at the end of last financial year. It reveals firm's profitability for shareholders. Data is draw from CSMAR.

2.16 Earning Cash Ratio (ECR)

Earning cash ratio (ECR) is computed as net operating cash flow over net income measured at the end of last financial year. It reveals firm's ability to generate free cash flow. Data is draw from CSMAR.

3. Summary Statistics

Table 1 presents the univariate statistics of variables in our paper. Panel A exhibits a strongly right-skewed market value of SEO sample, showing that our result might be dominated by those 'big issuers'. The average market value of issuance is 1.82 billion, slightly larger than 75th percentile, 1.80 billion. In spite of 36% of controlling shareholders participate in SEO, they possess 49.28% of issued stocks. In some cases, the controlling shareholders take 90% of issued stocks, most in stock merger of controlling shareholders' other assets. In our SEO sample, 35% of the firms are state owned. Furthermore, 6-month holding period return before the SEO event is 29% on average, but some firms still experiences a negative momentum.

Panel B describes the correlation structure of our variables in SEO sample with their t-statistics. Large and/or value firms tend to issue more in the context of market value, which make sense as they probably finance more compared with small/growth firms in the amount of money. Momentum variable is also positively related to both issuance volume and issuance market value, which is consistent with market timing story. It appears that issuance discount is positively affected by market value of issuance, but the impact is subtle. It is also positively affected by the participation of controlling shareholders. When controlling shareholders is involved in SEO, they might have more bargaining power and influence on the pricing process. Growth firms tend to have lower discount. As most of their M&A and investment is considered to have larger benefit compared with value firms, demand of their offering is higher as well, leading to a higher bidding price and lower discount.

Panel A presents the descriptive statistics for the variables of our main interest for stocks traded in SHSE and SZSE during January 2006 to Dec 2019, while panel B reports correlations among the variables. ISSUE_VOL is the number of shares issued in SEO. ISSUE_MV is market value of shares issued in SEO. DISCOUNT is the discount of issue price with respect to the closing price of last trading day before issuance. CS is the dummy variable set to one if the controlling shareholders participate in SEO, and zero otherwise. CSP is the percent of shares bought by controlling shareholders in SEO. SOE is the dummy variable set to one if issuer is stated owned, and zero otherwise. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy

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Table 1. Sample Summary Statistics

Panel A Summary Statistics						
Variable	Mean	P25	Median	P75	SD	N
ISSUE_VOL	220,533,252.71	30,000,000.00	70,000,000.00	181,653,042.00	675,311,821.29	4,035
ISSUE_MV	1,820,628,844.31	419,999,969.31	813,399,995.84	1,799,999,944.04	3,669,126,688.34	4,035
DISCOUNT	22.71	7.08	20.20	39.08	26.26	4,007
CS	0.36	0.00	0.00	1.00	0.48	4,035
CSP	49.28	16.43	40.00	97.14	36.79	1,491
SOE	0.35	0.00	0.00	1.00	0.48	4,035
SIZE	15.96	15.35	15.88	16.49	0.91	4,035
B/M	0.21	0.10	0.17	0.27	0.17	4,035
MOM	0.29	-0.06	0.13	0.44	0.70	3,926

Panel B Correlations									
Variable	ISSUE_VOL	ISSUE_MV	DISCOUNT	CS	CSP	SOE	SIZE	B/M	MOM
ISSUE_VOL	1								
ISSUE_MV	0.77	1							
DISCOUNT	0.06	0.03	1						
CS	0.07	0.07	0.02	1					
CSP	0.05	0.04	0.10	0.26	1				
SOE	0.12	0.12	-0.08	0.18	0.03	1			
SIZE	0.39	0.61	0.04	0.04	0.01	0.06	1		
B/M	0.22	0.17	-0.36	0.16	0.01	0.27	0.11	1	
MOM	0.07	0.04	0.39	-0.01	0.08	-0.06	0.10	-0.23	1

from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month.

4. Return Predictability of Share Issuance

In this section, we use Pontiff and Woodgate (2008) method to explore the return predictability of equity issuance for China market from 2006 to 2019. In the sense of Fama and MacBeth (1973), we run separate regressions using ISSUE variables with different time intervals and several holding-period returns for each month of data. We also consider book-to-market ratio (B/M), market capitalization (SIZE) and momentum (MOM) as control variables. Our model is stated as followed,

$$RETURN = \alpha + \beta_1 * ISSUE + \beta_2 * B/M + \beta_3 * SIZE + \beta_4 * MOM + \varepsilon$$

Four-time intervals to compute ISSUE variable (3-month, 6-month, 1-year and 3-year) and six holding period returns (3-month, 6-month, 9-month, 1-year, 2-year and 3-year) are considered.

The estimation result is presented in Table 2. Panel A states the test of different holding period returns on 3-month ISSUE. The sign of the slope coefficients for three control variables are consistent with previous studies: the slope coefficient on B/M is positive and significant, the slope coefficient on SIZE is negative and significant, and the slope coefficient on MOM is positive and significant. The slope coefficient on $ISSUE_{t,t-3}$ is statistically significant for four future returns. For the first 3-month and 6-month, $ISSUE_{t,t-3}$ has a negative impact on return performance, implying the market timing story. However, for a relatively long run performance, $ISSUE_{t,t-3}$ contributes to future stock return. The positive return predictability is stronger when we using ISSUE variable with longer past time interval. $ISSUE_{t,t-6}$ is still negatively and significantly impact 3-month stock return, but it turns to positive on 6-month stock return and afterward. As we can see in annual issuance variable $ISSUE_{t,t-12}$, cross-sectional returns for all six holding period have positive and significant slope coefficient.

Table 2 presents the result of Fama-MacBeth regression of cross-sectional returns on share issuance from January 2006 to Dec 2019 in China capital market. The dependent variable is cumulative return of stocks in 3-month, 6-month, 9-month, 1-year, 2-year and 3-year. The independent variables include share issuance variable ISSUE (Pontiff and Woodgate (2006)) on previous 3-month, 6-month, 1-year and 3-year. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month. Adjusted R^2 statistics reflect within variations. Robust t-statistics with Newey-West (1987) corrections are reported in the parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

Overall, we interpret the result of Fama-MacBeth re-

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Table 2. Share Issuance and Cross-sectional Return

Panel A Regression on ISSUE of last 3 months						
	RET_3M	RET_6M	RET_9M	RET_12M	RET_24M	RET_36M
Intercept	1.484***	2.191***	2.979***	3.009***	3.195***	-0.236***
	[147.06]	[131.88]	[130.51]	[103.17]	[84.79]	[-4.28]
ISSUE_P3	-0.038***	-0.033***	0.079***	0.081***	0.145***	0.107***
	[-6.72]	[-3.51]	[6.12]	[4.89]	[6.81]	[3.44]
B/M	0.033***	0.091***	0.150***	0.226***	0.310***	0.212***
	[20.86]	[35.63]	[42.54]	[50.23]	[53.18]	[24.91]
SIZE	-0.029***	-0.073***	-0.121***	-0.185***	-0.263***	-0.124***
	[-43.23]	[-65.95]	[-79.69]	[-95.35]	[-104.85]	[-33.87]
MOM	0.063***	0.116***	0.105***	0.061***	-0.075***	0.083***
	[43.83]	[49.37]	[32.31]	[14.80]	[-14.03]	[10.56]
Adj R-square	0.017***	0.033***	0.039***	0.053***	0.068***	0.008***
Panel B Regression on ISSUE of last 6 months						
	RET_3M	RET_6M	RET_9M	RET_12M	RET_24M	RET_36M
Intercept	1.483***	2.198***	2.986***	3.013***	3.207***	-0.221***
	[146.81]	[132.14]	[130.65]	[103.16]	[85.01]	[-4.01]
ISSUE_P6	-0.022***	0.030***	0.081***	0.061***	0.143***	0.145***
	[-5.42]	[4.46]	[8.69]	[5.14]	[9.27]	[6.43]
B/M	0.032***	0.093***	0.151***	0.227***	0.311***	0.214***
	[20.79]	[36.00]	[42.77]	[50.28]	[53.42]	[25.14]
SIZE	-0.029***	-0.073***	-0.122***	-0.185***	-0.264***	-0.125***
	[-43.05]	[-66.40]	[-79.92]	[-95.29]	[-105.06]	[-34.17]
MOM	0.063***	0.115***	0.104***	0.061***	-0.076***	0.080***
	[43.72]	[48.57]	[32.05]	[14.79]	[-14.28]	[10.26]
Adj R-square	0.017***	0.033***	0.039***	0.053***	0.069***	0.009***
Panel C Regression on ISSUE of last 12 months						
	RET_3M	RET_6M	RET_9M	RET_12M	RET_24M	RET_36M
Intercept	1.493***	2.209***	3.005***	3.056***	3.259***	-0.196***
	[144.45]	[129.82]	[128.38]	[102.07]	[84.57]	[-3.49]
ISSUE_P12	0.013***	0.033***	0.065***	0.100***	0.193***	0.220***
	[4.09]	[6.44]	[9.21]	[11.06]	[16.69]	[12.99]
B/M	0.033***	0.092***	0.150***	0.228***	0.313***	0.215***
	[20.86]	[35.49]	[41.95]	[49.64]	[53.09]	[25.00]
SIZE	-0.030***	-0.074***	-0.123***	-0.188***	-0.268***	-0.128***
	[-43.01]	[-65.35]	[-78.56]	[-94.21]	[-104.14]	[-34.06]
MOM	0.060***	0.114***	0.105***	0.061***	-0.076***	0.078***
	[41.65]	[47.64]	[31.92]	[14.50]	[-14.15]	[9.96]
Adj R-square	0.017***	0.032***	0.039***	0.053***	0.069***	0.009***
Panel D Regression on ISSUE of last 36 months						
	RET_3M	RET_6M	RET_9M	RET_12M	RET_24M	RET_36M
Intercept	1.495***	2.249***	3.064***	3.157***	3.323***	-0.375***
	[122.37]	[111.35]	[111.12]	[89.43]	[74.60]	[-5.64]
ISSUE_P36	0.019***	0.045***	0.067***	0.091***	0.150***	0.296***
	[8.79]	[12.36]	[13.63]	[14.44]	[18.90]	[24.99]
B/M	0.032***	0.089***	0.146***	0.222***	0.302***	0.222***
	[18.12]	[30.89]	[37.13]	[43.95]	[47.43]	[23.33]
SIZE	-0.030***	-0.077***	-0.127***	-0.196***	-0.274***	-0.124***
	[-36.44]	[-56.74]	[-68.46]	[-82.27]	[-91.35]	[-27.67]
MOM	0.060***	0.108***	0.095***	0.046***	-0.096***	0.048***
	[36.97]	[40.46]	[26.08]	[9.94]	[-16.35]	[5.48]
Adj R-square	0.016***	0.030***	0.037***	0.052***	0.069***	0.009***

gression as that share issuance variables, especially long-term ones, have a strong and positive return predictability in the long run, which is inconsistent with the U.S. market. It appears that a recent share issuance might depress stock return for several months, but after the fade away of supply pressure, stock price of the firm will converge with better estimation and higher valuation. On the second thought, the average R^2s suggest that issuance variables may not have such strong explanatory power on cross-sectional variance, but we can still draw the conclusion that equity issuance may have positive impact on future stock returns, which is a contradiction to market timing hypothesis.

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Table 3. Factors Impact Future Returns After SEO

	RET_6M	RET_6M	RET_12M	RET_12M	RET_24M	RET_24M	RET_36M	RET_36M
Intercept	0.917***	0.893***	2.001***	1.967***	2.114***	2.047***	0.862**	0.855**
	[4.67]	[4.55]	[8.24]	[8.08]	[8.30]	[8.02]	[2.46]	[2.43]
CS		0.050**		0.053*		0.055*		0.047*
		[2.06]		[1.70]		[1.68]		[1.69]
SOE		-0.046*		-0.061*		-0.103***		-0.022
		[-1.91]		[-1.95]		[-3.15]		[-0.49]
CMKT_RET_6M	0.970***	0.969***						
	[30.68]	[30.53]						
CMKT_RET_12M			0.796***	0.794***				
			[32.12]	[31.85]				
CMKT_RET_24M					0.738***	0.732***		
					[32.19]	[31.79]		
CMKT_RET_36M							0.738***	0.739***
							[31.34]	[31.13]
B/M	-0.139**	-0.144**	-0.065	-0.064	-0.116	-0.094	-0.259**	-0.273**
	[-2.30]	[-2.30]	[-0.84]	[-0.79]	[-1.41]	[-1.10]	[-2.28]	[-2.33]
SIZE	-0.055***	-0.053***	-0.129***	-0.127***	-0.156***	-0.150***	-0.090***	-0.090***
	[-4.57]	[-4.39]	[-8.39]	[-8.16]	[-9.52]	[-9.16]	[-3.99]	[-3.95]
MOM	-0.051**	-0.053**	-0.011	-0.014	-0.055*	-0.060**	-0.029	-0.03
	[-2.35]	[-2.44]	[-0.40]	[-0.50]	[-1.89]	[-2.06]	[-0.73]	[-0.75]
Adj R-square	0.451***	0.453***	0.496***	0.498***	0.518***	0.522***	0.463***	0.463***

5. Factors Influence Future Return on Equity Issuance

We further investigate the short-term and long-term co-movement between future stock returns and equity issuance factors within the SEO sample. From Jan 2006 to Dec 2019, we run several Fama-MacBeth regressions on different holding period cross-sectional returns for those firms which have completed equity issuance. We consider some factors that might have impact the return performance, including controlling shareholders' participation dummy (CS) and state-owned dummy (SOE). The control variables are corresponding market returns (MKT_RETURN), book-to-market ratio (B/M), market capitalization (SIZE) and momentum (MOM). Our model is stated as followed,

$$RETURN = \alpha + \beta_1 * CS + \beta_2 * SOE + \beta_3 * MKT\_RETURN + \beta_4 * B/M + \beta_5 * SIZE + \beta_6 * MOM + \varepsilon$$

We consider four holding period returns (6-month, 1-year, 2-year and 3-year) and the estimation result is presented in Table 3. For each set of holding period, we run two tests. First one has only control variables as independent variables, and the second one includes SEO factors. The sign of the slope coefficients for control variables are generally consistent with previous studies. Market returns are positively and significantly correlated to future stock performance in our SEO sample as we expected, since most firms have a positive beta. Smaller firms, measured as capital size, tend to have a better return performance. It makes sense that small firms are generally more sensitive to financial improvement and/or investor sentiment than larger firms (Baker and Wurgler (2002)). Growth firms experience higher stock returns than value firms, but the outcome is not consistent in most cases. The slope coefficients on CS dummy are positive and significant for four holding period returns. Involvement of controlling shareholders in equity issuance combines the interests of controlling shareholders and outside investors, relaxing their concern of information asymmetry. Also, it gives firm' managers more incentives to improve profitability and stock performance, benefitting the controlling shareholders. The slope coefficients on SOE dummy are negative and significant for 6-month, 1-year and 2-year holding period returns. Most SOEs in China sometimes have to carry out more social responsibilities or maintain social stability (see Bai, Lu and Tao (2006), Ho(2008), Dewenter and Malatesta (2000), Li and Zhang (2010), and Kolk, Hong

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and van Dolen (2010)), resulting to a lower profitability and efficiency than those privately owned firms. We also take cumulative capital expenditure into consideration, but the test result is not significant for all four holding period returns.

Table 3. presents the result of Fama-MacBeth regression of cross-sectional returns on several factors after SEO from January 2006 to Dec 2019 in China capital market. The dependent variable is cumulative return of stocks in 6-month, 1-year, 2-year and 3-year. CS is the dummy variable set to one if the controlling shareholders participate in SEO, and zero otherwise. SOE is the dummy variable set to one if issuer is stated owned, and zero otherwise. CMKT_RET is the cumulative market return with different time intervals including 6-month, 1-year, 2-year and 3-year. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month. Adjusted R^2 statistics reflect within variations. Robust t-statistics with Newey-West (1987) corrections are reported in the parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

For all models in this section, we observe a positive and significant abnormal return, which is consistent with what we find in last section. The stock performance of those SEO firms outweighs the market in cross-sectional consistently, despite of the participation of controlling shareholders or entity property. If firms take advantage of information asymmetry and issue equity when its valuation is high, its stock price should revert to intrinsic value afterward, at least in the long run. Our findings in China market dispute the market timing hypothesis in some extent. The three assumptions laid on it are these: first, controlling shareholders have information advantage on outside investors; second, at least some outside investors are not aware of controlling shareholders' willingness and ability to time the market; third, although some outside investors understand the information asymmetry, they are constrained in arbitrage. In next section, we will investigate the pricing process of SEO to figure out the reliability of these assumptions.

6. Issuance Discount and Controlling Shareholders

Share issuance discount is a mirror reflecting information asymmetry and market timing of controlling shareholder. Larrain and Urzua (2013) argue that share issuance in general predict low future returns due to information asymmetry and outside investors' naivety. The underperformance is more pronounced in the absence of institutional investors and in a hot issuance market. Chan and Chan (2014) show that a better information environment, such as higher analyst coverage, can mitigate the negative relation between SEO discount and stock return synchronicity.

We take Fama-MacBeth regressions on SEO discount in our sample with model below:

$$DISCOUNT = \alpha + \beta_1 * ISSUE\_PCT + \beta_2 * CS + \beta_3 * SOE + \beta_4 * CapEx + \beta_5 * B/M + \beta_6 * SIZE + \beta_7 * MOM + \varepsilon$$

Test results are shown in Table 4. Growth firms tend to have higher discount on equity issuance, partly because after the approval of equity issuance by CSRC, their stock price rise more sharply due to higher sensitivity than value firms. It coincides with a positive and significant relation between issuance discount and momentum. Large firms have higher discount as their issuance volume are usually large. The slope coefficient on issuance percentage is positive and significant as expected. Controlling shareholders usually have bargain power on listed firm with which outside investors are willing to share, resulting to a higher issuance discount. In addition, SOE dummy contributes to issuance discount negatively, but the impact is insignificant.

Table 4 presents the result of Fama-MacBeth regression of issuance discount in SEO on several factors from January 2006 to Dec 2019 in China capital market. The dependent variable is issuance discount with respect to closing price of last trading day before issuance. ISSUE_PCT is the proportion of equity issued as to firm's market value at the end of last month. CS is the dummy variable set to one if the controlling shareholders participate in SEO, and zero otherwise. SOE is the dummy variable set to one if issuer is stated owned, and zero otherwise. CapEx is the capital expenditure ratio computed as capital expenditure over net value of property, plant and equipment (PPE) measured at the end of last financial year. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month. Adjusted R^2 statistics reflect within variations. Robust t-statistics with Newey-West (1987) corrections are reported in the

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parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

Table 4. Factors Impact Issuance Discount in SEO

	(1)	(2)	(3)	(4)	(5)
Intercept	10.951	7.448	7.089	6.756	6.615
	[1.53]	[1.03]	[0.98]	[0.93]	[0.91]
ISSUE_PCT		0.004***	0.003***	0.004***	0.003***
		[2.90]	[2.74]	[2.82]	[2.80]
CS			3.359***	3.459***	3.451***
			[3.91]	[3.99]	[3.98]
SOE				-0.743	-0.757
				[-0.80]	[-0.81]
CapEx					-0.406
					[-1.44]
B/M	-42.208***	-42.948***	-44.429***	-43.967***	-44.097***
	[-17.52]	[-17.75]	[-18.19]	[-17.51]	[-17.55]
SIZE	1.060**	1.253***	1.228***	1.253***	1.274***
	[2.37]	[2.78]	[2.73]	[2.78]	[2.82]
MOM	12.100***	12.081***	12.036***	12.020***	11.998***
	[20.50]	[20.49]	[20.45]	[20.42]	[20.37]
Adj R-square	0.237***	0.239***	0.243***	0.243***	0.243***

Considering the significance of slope coefficient on several factors, including issuance percent, controlling shareholder's participation and momentum, it is sound that outside investors are aware of the information asymmetry and want to be compensated by issuance discount. We also report average profitability and capital expenditure of SEO firms 3 years before and after issuance in Table 5. It appears that neither profitability nor capital expenditure of the firms' average has improved after equity issuance. In all, market timing theory may not hold in China stock market and we try to disentangle the mystery with investor sentiment theory in next section.

Table 5 presents the profitability, capital expenditure and valuation 3 years before and after SEO from January 2006 to Dec 2019 in China capital market. CapEx is the capital expenditure ratio computed as capital expenditure over net value of property, plant and equipment (PPE) measured at the end of last financial year. NPM is the net profit margin computed as net income over total revenue measured at the end of last financial year. ROE is the return on equity computed as net income over book value of equity measured at the end of last financial year. ECR is the earning cash ratio computed as net operating cash flow over net income measured at the end of last financial year. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December.

Table 5. Profitability, Capital Expenditure and Valuation around SEO

Variable	3-year before	2-year before	1-year before	SEO year	1-year after	2-year after	3-year after
CapEx	1.199	0.334	0.405	1.169	0.367	0.295	0.253
NPM	0.563	0.634	0.907	0.109	0.102	0.082	0.052
ROE	0.029	0.350	0.178	0.082	0.074	0.062	0.104
ECR	1.161	0.223	0.388	0.074	0.053	0.091	0.058
B/M	0.384	0.365	0.283	0.335	0.360	0.390	0.434

7. Investor Sentiment and Cross-Sectional Return of SEO

Investor sentiment measures the general attitude of investors towards a security or market at a given time, including future payoffs, investment risks, etc. Two basic assumptions of how investor sentiment affects stock return are: first, investors are subject to sentiment; second, rational investors are limited to arbitrage (See De Long et al. (1990), Shleifer and Vishny (1997), etc.). Studies on stock market performance, especially in crashes (Kindleberger (2001) and Shiller (2000)), show a nice pattern of how investor sentiment cooperates with the return performance.

Prior research suggests that there are a number of approximation methods for investor sentiment (mutual fund flow, trading volume, close-end fund discount, option implied volatility, first day return of IPO, equity issues over total issue and so on), in spite of the fact that none of them is definitive or uncontroversial. Among them, market turnover is generally accepted as an investor sentiment measure. We construct monthly China A-share market turnover MKT_TR as trading market value of SHSE and SZSE A-share over total market capitalization of two exchanges, averaging by number of trading days in each month. Intuitively, the more optimistic of investor, the higher MKT_TR is. From Jan 2006 to Dec 2019, market turnover is volatile, representing a deteriorate investor sentiment.

Similarly, we implement Fama-MacBeth approach to discover the relation between investor sentiment and cross-sectional return. We run separate regressions on several holding period returns for each month with annual issuance variable $ISSUE_{t,t-11}$ and monthly market turnover MKT_TR. Regression model is stated as,

$$RETURN = \alpha + \beta_1 * ISSUE + \beta_2 * MKT\_TR + \beta_3 * B/M + \beta_4 * SIZE + \beta_5 * MOM + \varepsilon$$

Four-time intervals to compute ISSUE variable (3-month, 6-month, 1-year and 3-year) and six hold-

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Table 6. Investor Sentiment and Cross-sectional Return

Panel A	**Regression on cross-sectional returns with ISSUE of last 3 months**											
	RET_3M	RET_3M	RET_6M	RET_6M	RET_9M	RET_9M	RET_12M	RET_12M	RET_24M	RET_24M	RET_36M	RET_36M
Intercept	1.540***	1.539***	2.261***	2.262***	3.060***	3.070***	3.098***	3.108***	3.274***	3.288***	-0.068	-0.053
	[157.43]	[157.24]	[138.68]	[138.60]	[136.20]	[136.54]	[107.40]	[107.67]	[87.37]	[87.70]	[-1.25]	[-0.97]
MKT_TR	0.024***	0.023***	0.030***	0.030***	0.038***	0.039***	0.042***	0.042***	0.039***	0.040***	0.077***	0.078***
	[114.21]	[114.00]	[87.94]	[87.87]	[81.06]	[81.48]	[68.47]	[68.81]	[49.65]	[50.06]	[67.37]	[67.63]
ISSUE_P3		-0.007		0.007		0.130***		0.136***		0.197***		0.210***
		[-1.32]		[0.75]		[10.22]		[8.32]		[9.30]		[6.80]
B/M	0.035***	0.035***	0.094***	0.094***	0.152***	0.153***	0.228***	0.230***	0.311***	0.313***	0.216***	0.219***
	[22.90]	[22.82]	[37.31]	[37.31]	[43.78]	[44.17]	[51.30]	[51.60]	[53.73]	[54.08]	[25.71]	[25.97]
SIZE	-0.043***	-0.043***	-0.091***	-0.091***	-0.143***	-0.144***	-0.209***	-0.210***	-0.285***	-0.287***	-0.170***	-0.171***
	[-65.70]	[-65.47]	[-82.81]	[-82.68]	[-94.52]	[-95.01]	[-107.46]	[-107.79]	[-112.70]	[-113.09]	[-46.13]	[-46.48]
MOM	0.008***	0.008***	0.046***	0.046***	0.019***	0.015***	-0.032***	-0.036***	-0.161***	-0.167***	-0.092***	-0.098***
	[5.37]	[5.48]	[19.02]	[18.82]	[5.54]	[4.40]	[-7.49]	[-8.34]	[-28.86]	[-29.71]	[-11.34]	[-12.01]
Adj R-square	0.077***	0.077***	0.069***	0.069***	0.070***	0.070***	0.075***	0.075***	0.079***	0.080***	0.030***	0.031***
Panel B	**Regression on cross-sectional returns with ISSUE of last 6 months**											
	RET_3M	RET_3M	RET_6M	RET_6M	RET_9M	RET_9M	RET_12M	RET_12M	RET_24M	RET_24M	RET_36M	RET_36M
Intercept	1.540***	3.302***	-0.067	-0.034	1.540***	2.262***	2.271***	3.060***	3.079***	3.098***	3.113***	3.274***
	[157.39]	[87.98]	[-1.24]	[-0.61]	[157.09]	[138.67]	[138.99]	[136.18]	[136.77]	[107.37]	[107.72]	[87.38]
MKT_TR	0.023***	0.040***	0.077***	0.078***	0.023***	0.030***	0.030***	0.038***	0.039***	0.042***	0.042***	0.039***
	[114.14]	[50.18]	[67.35]	[67.78]	[114.00]	[87.91]	[88.26]	[81.04]	[81.62]	[68.45]	[68.81]	[49.63]
ISSUE_P6		0.182***		0.221***	0.001		0.060***		0.119***		0.102***	
		[11.83]		[9.89]	[0.13]		[8.96]		[12.91]		[8.64]	
B/M	0.035***	0.315***	0.216***	0.221***	0.035***	0.094***	0.095***	0.152***	0.155***	0.228***	0.231***	0.311***
	[22.90]	[54.37]	[25.71]	[26.26]	[22.86]	[37.31]	[37.78]	[43.77]	[44.48]	[51.29]	[51.72]	[53.74]
SIZE	-0.043***	-0.288***	-0.170***	-0.173***	-0.043***	-0.091***	-0.092***	-0.143***	-0.145***	-0.209***	-0.211***	-0.285***
	[-65.68]	[-113.36]	[-46.14]	[-46.88]	[-65.39]	[-82.81]	[-83.30]	[-94.51]	[-95.35]	[-107.43]	[-107.79]	[-112.71]
MOM	0.008***	-0.169***	-0.092***	-0.101***	0.008***	0.046***	0.044***	0.019***	0.014***	-0.032***	-0.036***	-0.161***
	[5.41]	[-29.99]	[-11.30]	[-12.36]	[5.36]	[19.07]	[17.92]	[5.61]	[4.09]	[-7.42]	[-8.36]	[-28.82]
Adj R-square	0.077***	0.080***	0.030***	0.031***	0.077***	0.069***	0.069***	0.070***	0.070***	0.075***	0.075***	0.079***
Panel C	**Regression on cross-sectional returns with ISSUE of last 12 months**											
	RET_3M	RET_3M	RET_6M	RET_6M	RET_9M	RET_9M	RET_12M	RET_12M	RET_24M	RET_24M	RET_36M	RET_36M
Intercept	1.545***	3.357***	-0.081	-0.003	1.551***	2.271***	2.283***	3.076***	3.100***	3.124***	3.160***	3.289***
	[155.00]	[87.56]	[-1.47]	[-0.05]	[154.71]	[136.57]	[136.60]	[134.13]	[134.48]	[105.98]	[106.66]	[86.19]
MKT_TR	0.024***	0.040***	0.079***	0.079***	0.024***	0.030***	0.030***	0.039***	0.039***	0.042***	0.043***	0.040***
	[113.30]	[50.28]	[68.24]	[68.37]	[113.34]	[87.27]	[87.33]	[80.96]	[81.05]	[68.66]	[68.76]	[50.12]
ISSUE_P12		0.198***		0.228***	0.015***		0.036***		0.069***		0.104***	
		[17.16]		[13.64]	[5.03]		[7.19]		[9.95]		[11.68]	
B/M	0.034***	0.316***	0.210***	0.220***	0.034***	0.093***	0.094***	0.150***	0.153***	0.226***	0.230***	0.307***
	[22.14]	[53.85]	[24.77]	[25.86]	[22.49]	[36.42]	[36.91]	[42.62]	[43.33]	[49.98]	[50.81]	[52.53]
SIZE	-0.044***	-0.292***	-0.169***	-0.176***	-0.044***	-0.092***	-0.093***	-0.144***	-0.147***	-0.211***	-0.214***	-0.286***
	[-64.93]	[-112.42]	[-45.26]	[-46.75]	[-65.00]	[-81.69]	[-81.90]	[-93.24]	[-93.74]	[-105.98]	[-106.61]	[-111.03]
MOM	0.006***	-0.169***	-0.097***	-0.104***	0.006***	0.045***	0.044***	0.017***	0.015***	-0.034***	-0.037***	-0.163***
	[4.23]	[-29.77]	[-11.85]	[-12.63]	[3.94]	[18.07]	[17.63]	[5.01]	[4.42]	[-7.74]	[-8.41]	[-28.80]
Adj R-square	0.078***	0.081***	0.031***	0.032***	0.078***	0.069***	0.069***	0.070***	0.070***	0.075***	0.076***	0.079***
Panel D	**Regression on cross-sectional returns with ISSUE of last 36 months**											
	RET_3M	RET_3M	RET_6M	RET_6M	RET_9M	RET_9M	RET_12M	RET_12M	RET_24M	RET_24M	RET_36M	RET_36M
Intercept	1.562***	3.473***	-0.439***	-0.047	1.588***	2.309***	2.369***	3.123***	3.214***	3.196***	3.317***	3.274***
	[135.60]	[78.26]	[-6.86]	[-0.72]	[134.20]	[119.65]	[119.49]	[118.09]	[118.27]	[93.88]	[94.86]	[75.76]
MKT_TR	0.025***	0.041***	0.089***	0.089***	0.025***	0.033***	0.033***	0.041***	0.041***	0.044***	0.044***	0.041***
	[105.27]	[45.24]	[66.63]	[66.92]	[105.36]	[81.50]	[81.62]	[73.79]	[73.92]	[61.51]	[61.64]	[45.08]
ISSUE_P36		0.152***		0.301***	0.020***		0.046***		0.069***		0.093***	
		[19.29]		[25.75]	[9.73]		[13.11]		[14.31]		[14.98]	
B/M	0.033***	0.307***	0.208***	0.232***	0.035***	0.089***	0.093***	0.146***	0.151***	0.220***	0.227***	0.295***
	[19.58]	[48.46]	[22.29]	[24.73]	[20.44]	[31.71]	[32.85]	[37.72]	[38.96]	[44.20]	[45.47]	[46.75]
SIZE	-0.046***	-0.303***	-0.154***	-0.187***	-0.048***	-0.095***	-0.100***	-0.148***	-0.156***	-0.216***	-0.227***	-0.286***
	[-58.36]	[-99.33]	[-35.41]	[-41.32]	[-58.75]	[-72.84]	[-73.61]	[-82.75]	[-83.47]	[-93.77]	[-94.24]	[-97.76]
MOM	0.002	-0.188***	-0.154***	-0.153***	0.003	0.034***	0.034***	0.003	0.003	-0.053***	-0.052***	-0.189***
	[1.50]	[-30.40]	[-16.85]	[-16.72]	[1.57]	[12.15]	[12.24]	[0.70]	[0.80]	[-10.82]	[-10.73]	[-30.49]
Adj R-square	0.081***	0.081***	0.033***	0.037***	0.082***	0.069***	0.070***	0.069***	0.070***	0.073***	0.075***	0.079***

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ing period returns (3-month, 6-month, 9-month,1-year, 2-year and 3-year) are considered in the model and result is presented in Table 6. The slope coefficients of market turnover are positive and significant for all ISSUE time intervals and holding period returns, indicating that investor sentiment measure also has a strong predictability to cross-sectional return. Until now, it appears that investor sentiment has an even better explanatory power on cross-sectional return than ISSUE with better consistency across different time interval and higher t-statistics. To move on, we explore the relation between future equity issuance and investor sentiment in next section.

Table 6 presents the result of Fama-MacBeth regression of cross-sectional returns on share issuance from January 2006 to Dec 2019 in China capital market. The dependent variable is cumulative return of stocks in 3-month, 6-month, 9-month, 1-year, 2-year and 3-year. The independent variables include share issuance variable ISSUE (Pontiff and Woodgate (2006)) on previous 3-month, 6-month, 1-year and 3-year. MKT_TR is the monthly market turnover computed as total transaction value divided by the total market capitalization at the end of each month, averaging by number of trading days in that month. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month. Adjusted R2 statistics reflect within variations. Robust t-statistics with Newey-West (1987) corrections are reported in the parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

8. Investor Sentiment and Equity Issuance

Our test on investor sentiment and equity financing decision-making is implemented by the model below,

$$ISSUE = \alpha + \beta_1 * MKT\_TR + \beta_2 * CapEx + \beta_3 * NPM + \beta_4 * ROE + \beta_5 * ECR + \beta_6 * B/M + \beta_7 * SIZE + \beta_8 * MOM + \varepsilon$$

Four-time intervals to compute ISSUE variable are considered, including 6-month, 1-year, 2-year and 3-year ahead. Test result in Table 7 states that as an investor sentiment measure, market turnover is a good indicator to future issuance variable in both short-term and long-term, with positive and significant coefficient. Its performance is more consistent than those of fundamentals, such as capital expenditure, net profitability and ROE.

Table 7 presents the result of Fama-MacBeth regression of share issuance ISSUE on investor sentiment measure market turnover from January 2006 to Dec 2019 in China capital market. The independent variables include share issuance variable ISSUE (Pontiff and Woodgate (2006)) on next 6-month, 1-year, 2-year and 3-year. MKT_TR is the monthly market turnover computed as total transaction value divided by the total market capitalization at the end of each month, averaging by number of trading days in that month. CapEx is the capital expenditure ratio computed as capital expenditure over net value of property, plant and equipment (PPE) measured at the end of last financial year. NPM is the net profit margin computed as net income over total revenue measured at the end of last financial year. ROE is the return on equity computed as net income over book value of equity measured at the end of last financial year. ECR is the earning cash ratio computed as net operating cash flow over net income measured at the end of last financial year. SIZE is the natural logarithm of market value of the firm. B/M is the book-to-market ratio from Fama and French (1992) computed as book value of equity from last financial year over market value of the firm on the end of last December. MOM is the momentum proxy from Jegadeesh and Titman (1993), computed as the cumulative return from previous 6 months, and lagged by 1 month. Adjusted R^2 statistics reflect within variations. Robust t-statistics with Newey-West (1987) corrections are reported in the parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

Table 7. Investor Sentiment and Share Issuance

	ISSUE_6M	ISSUE_12M	ISSUE_24M	ISSUE_36M
Intercept	-0.046***	-0.004	0.253***	0.606***
	[-8.47]	[-0.46]	[20.98]	[39.26]
MKT_TR	0.003***	0.005***	0.011***	0.012***
	[26.18]	[32.23]	[43.49]	[37.94]
CapEx	0.000	0.000	0.000***	0.001***
	[0.36]	[0.15]	[3.40]	[9.01]
NPM	0.000	0.000	0.000	0.000
	[0.54]	[0.74]	[0.27]	[0.54]
ECR	-0.000**	-0.000***	-0.000***	-0.000***
	[-2.07]	[-3.82]	[-4.84]	[-5.21]
ROE	0.000	0.000	-0.000	-0.000**
	[0.54]	[0.63]	[-1.13]	[-2.20]
B/M	-0.023***	-0.038***	-0.049***	-0.055***
	[-27.19]	[-30.99]	[-26.41]	[-23.16]
SIZE	0.006***	0.006***	-0.004***	-0.020***
	[16.25]	[12.18]	[-5.52]	[-19.24]
MOM	0.021***	0.040***	0.048***	0.044***
	[24.49]	[33.61]	[25.82]	[18.58]
Adj R-square	0.018***	0.026***	0.024***	0.017***

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To summarize, market turnover gives a strong and positive predication to cross-sectional return performance in China capital market. Compared with that of share issuance, its impact is more consistent in both long run and short run. Market turnover is also a good proxy for future share issuance, even better than fundamental variables measure financial status of the firm. It seems that explanatory power share issuance have on variation of cross-sectional return is dominated by that of investor sentiment.

9. Conclusion

The mispricing story between equity financing and return performance is in a long-existing debate among scholars. Some may explain the predictability of share issuance on cross-sectional return as firm's willingness and ability to time the market with information advantage. With assumptions of market timing hypothesis that outside investors are naïve to acknowledge the information asymmetry or restricted to arbitrage, firm is able to issue equity when its valuation is high, resulting to a negative abnormal return after SEO.

However, our empirical findings on China capital market from 2006 to 2019 suggest the other way. In addition to positive relation between share issuance and future stock return, we find that outside investors are aware of information asymmetry and willing to be compensated by issuance discount, contradicting to the assumption of outside investor's naivety in market timing hypothesis. Our test result also reveals that as an investor sentiment measure, market turnover has a strong and positive predict power to future stock performance after SEO. Besides that, its explanatory power on the variation of cross-sectional return dominates that of share issuance, market turnover is also a good proxy of share issuance, even better than fundamental variables.

Our paper indicates that investor sentiment can shed light on decision-making process of equity issuance as well as cross-sectional return performance after SEO in China capital market. Its implications may help us better understand the market and behavioral finance pattern of investors, as well as provide a better risk factor in asset pricing model.

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ARTICLE

Performance Evaluation of Commercial Banks Based on EVA——Take ICBC for Example

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ABSTRACT

In order to further improve the enterprise performance evaluation system, it is necessary to study the application value of EVA management system in China's listed companies. Based on the data of ICBC from 2016 to 2018, this paper uses EVA method to evaluate and analyze it.

1. Introduction

The bank is one of the most important financial institutions in the economy, and the commercial bank is a kind of financial enterprise. For a long time, the state-owned commercial bank occupies the main position in the financial industry of our country, and plays an important role in serving the economic construction and promoting the reform of the financial industry. Due to the particularity of the business and assets of commercial banks, performance analysis is an important means to improve the management level of modern commercial banks. Scientific and reasonable performance evaluation method can not only improve the management level of banks, but also for government investors and creditors and other stakeholders to provide important basis for decision-making. The introduction of EVA performance evaluation index makes the target management of commercial banks simpler, the enterprise value and the value of employees maximize, and guide the healthy and sustainable development of commercial banks from the perspective of value management.

2. The Application of EVA Method in Commercial Banks

At present, China's commercial banks are developing rapidly, but they are also facing many management problems, which affect the normal operation of commercial banks. Domestic scholars are also exploring more suitable methods for the practical application of domestic enterprises in the study of EVA theory. Ouyang Chunhua combines the provisions of China's accounting standards and the main ways of earnings management in accounting practice, and puts forward a detailed and unified adjustment method

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for the accounting adjustment needed to be carried out in the implementation of EVA indicators for the financial expenses, R&D expenses, various reserves, goodwill and other subjects of enterprises. EVA has been widely used in commercial banks and promoted the development of commercial banks.[1]

3. An empirical analysis on the performance evaluation of industrial and Commercial Bank of China

3.1 Sample Selection

This paper selects the behavioral research of ICBC from 2016 to 2018. The sample data mainly comes from the annual report disclosed by ICBC.

3.2Parameter Determination

3.2.1 Adjusted Net Operating Profit After Tax (NOPAT)

After tax net operating profit refers to the amount of the company's operating profit excluding interest income and expenditure after deducting the paid in income tax plus non-cash expenses, such as depreciation and amortization, and then deducting the additional working capital and investment in property, plant, equipment and other assets.

The basic formula of NOPAT is: after tax net operating profit = NOPAT = net profit + accrued asset impairment loss - (non-operating income - non operating expenditure) (1 - tax rate) + deferred income tax liabilities - deferred income tax assets.

Table 1. NOPAT calculation results of industrial and Commercial Bank of China (Unit: million Yuan)

TIME	2016	2017	2018
Net profit	279,106	287,451	298,700
assets impairment loss	87,894	127,769	161,600
Non-operating income	3,601	3,805	2,530
Non-operating expenses	637	1,006	1,300
Net non-operating income	2,223	2,099	1,230
Increase in deferred income tax liabilities	(391)	(171)	784
Increase of deferred income tax assets	7,332	19,994	10,000
NOPAT	357,480.32	392,961.87	450,013.9

Recourses: Data from the annual report of industrial and Commercial Bank of China.

3.2.2 Total Invested Capital (TC)

Total capital invested (refers to the sum of the book value of all the capital invested by the owners and creditors of the enterprise. Among them, the capital invested by shareholders is called equity capital, including common owner's equity and minority shareholders' equity; the capital invested by creditors is called debt capital, which includes long-term loans, short-term loans and long-term loans due within one year provided by creditors to enterprises, as well as interest payment bonds issued by enterprises, etc. TC = debt capital + shareholders' equity + balance of provision for impairment of assets at the end of the year - Construction in progress + deferred income tax liabilities - deferred income tax assets[2].

Table 2. TC calculation results of ICBC (Unit: million Yuan)

TIME	2016	2017	2018
Debt capital	1,516,692	1,214,601	1,328,246
Shareholders' rights and interests	1,981,163	2,141,056	2,345,000
Balance of provision for impairment of assets at the end of the year	901	39,875	33,825
Balance of deferred income tax liabilities	604	433	1,217
Balance of deferred income tax assets	28,398	48,392	58,392
Construction in progress	22,958	29,531	35,080
TC	3,448,004	3,318,042	3,614,816

Recourses: Data from the annual report of industrial and Commercial Bank of China.

3.2.3 Weighted Average Cost of Capital (WACC)

Used in financial activities to measure the cost of capital of a company. Because financing cost is regarded as a logical price tag, it used to be used by many companies as the discount rate of a financing project. Its general expression is

(1) WACC = (E / V) × re + (D / V) × Rd × (1-TC) or

(2) WACC = risk free rate of return + β × market risk premium.

Where, re = cost of equity in (1) is the necessary rate of return for investors; RD = cost of debt; E = market value of the company's equity; d = market value of the company's debt; v = e + D is the market value of the company; E / v = percentage of equity in total financing, capitalization ratio; D / v = percentage of debt in total financing, asset liability ratio. TC = enterprise tax rate

When the components of the weighted average cost

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capital method are determined, they can be substituted into RWACC = (s / B + s) × RS + (B / B + s) × RB × (1-TC) one by one, then the capital cost of specific investment projects can be calculated to make financing decisions.

From the above conclusion, we can get the basic formula EVA = NOPAT - TC × WACC to determine the final value.

Table 3. WACC calculation results of industrial and Commercial Bank of China (Unit: million Yuan)

TIME	2016	2017	2018
Risk coefficient	0.998	0.998	0.998
Risk free rate of return (%)	2.270	3.310	4.310
Market risk premium (%)	5	5	5
WACC (%)	7.26	8.3	9.3

Resources: Data from wind database.

According to the formula, the EVA / Reva (Reva = EVA / total capital) value of ICBC in 2016-2018 is calculated as shown in Table 4.

Table 4. EVA / Reva calculation results of industrial and Commercial Bank of China (Unit: million Yuan)

time	2016	2017	2018
EVA	107,155.23	117,564.384	113,836
REVA (%)	3.108	3.543	3.149

3.3 Index Analysis

Through data analysis, it can be seen that the net profit of ICBC has been rising in 2016-2017, and the EVA index has also been improving. It can be seen that ICBC has been improving its enterprise value and comprehensive ability. However, after 2017, the EVA index has declined significantly, and the change range of EVA is larger than the net profit. The shareholders' wealth is in the state of impairment based on the shareholder's position analysis, while the management blindly believes that the business operation is in good condition. The reasons are as follows: the traditional net profit index only adds and subtracts accounting operations, ignoring the economic meaning of the corresponding index. The calculation of EVA index takes into account the risk coefficient of the financial environment in which the bank is located, market risk premium and other factors. Here, it also reflects the advanced nature, feasibility and scientificity of EVA method. Introducing EVA is beneficial for commercial banks to create and improve their own value.

4. Summary and Suggestions

4.1 Summary

This paper takes industrial and Commercial Bank of China as the research object, compares the EVA index with the traditional performance index, and finds that the EVA index can reflect the performance level of the banking industry more objectively and comprehensively by analyzing the operation status of the bank from the economic level, taking into account the opportunity cost of occupying shareholder capital and market risk and other factors. As a scientific indicator to measure the performance of enterprises, EVA will be used more and more widely in commercial banks, which is not only conducive to improving the core competitiveness of commercial banks, but also conducive to the overall governance and system improvement of enterprises. Under the current market economy system and economic trend, commercial banks need to establish a perfect EVA management system to achieve the comprehensive optimization of management and maximize the interests of shareholders.

4.2 Relevant Suggestions

In the new era and new environment, industrial and Commercial Bank of China should analyze the business performance from the economic level, pay attention to improving the economic added value of commercial banks, and realize the maximization of shareholders' ability to create value.

4.2.1 Establish a Perfect Management System

First of all, we should improve the overall financial and financial environment, from the establishment of a suitable talent application mechanism to the improvement of the overall quality of employees, and then to the improvement of corporate governance, to create a good corporate and social environment.

Most commercial banks in China have completed the reform of joint-stock system and established a modern corporate governance structure, but the governance structure has not fundamentally solved the problem of "insider control" in commercial banks. It is difficult for the board of supervisors to effectively supervise the financial situation of directors, senior management and the company, for the board of directors to effectively monitor senior managers and other operators, and for the senior management to effectively restrict the operation of branches. Therefore, the establishment of an effective risk management organization structure of commercial banks in China must be matched with the overall operation and management

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structure of banks. The functional departments of banks should be divided into risk management line, business development line, operation support line,[3] separation of rights and responsibilities of each department and management, effective and retrograde governance, and risk management should be strengthened.

4.2.2 Development and Innovation Need to Be Improved

In the past, China's commercial banks have accumulated a lot of basic experience in the construction of the Internet. With the development of the trend of the times, commercial banks should enhance the basic experience of financial business and build.

A set of relatively perfect risk management system, with a group of talents who are familiar with finance and Internet technology application, and store a large number of "big data" in the system. At the same time, traditional financial institutions also have the advantages of capital, customers, etc. in the future, as long as commercial banks continue to actively explore to meet the new challenges brought by the development of the Internet and continue to innovate, it will still become a driving force and guide Leading the main force of Internet finance development and innovation. Therefore, under the current new competition pattern, it is of great significance to study the development status of Internet Finance and commercial banks' use of Internet technology innovation, re-examine the advantages and disadvantages of banks, and take this opportunity to promote the development of traditional banking business and the thorough innovation and transformation of business management mode.[4]

5. Conclusion

As China's economy changes from high-speed growth to medium high-speed growth, the high-speed growth of banking assets and profits for many years will also be adjusted to medium high-speed growth. In the past, the convenience for the development of banking industry is no longer available, and a stable growth rate will become a long-term trend of banking industry. [5] The core of EVA is to calculate the "real economic profit" of an enterprise, that is, the profit of an enterprise after considering the return on investment of shareholders, the long-term development of the enterprise, the financial value of the enterprise and the value that cannot be reflected by the financial data. The application of EVA in commercial banks is undoubtedly a method that is conducive to corporate governance and long-term sustainable development.

China's commercial banks should introduce EVA value management system in an all-round way, conscientiously analyze the new normal characteristics of banking industry, actively face the trend of financial wave, actively innovate, meet challenges and risks, and take EVA as the strong endogenous power of enterprises.

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ARTICLE

Research on the Effectiveness of KMV Model in China's Bond Credit Rating Market

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ABSTRACT

In recent years, China's bond market has experienced rapid development, but the pace of credit risk supervision has not kept up. Since 2014, the number of domestic credit bond defaults has increased. In 2016, there were 79 domestic default bonds, with a default amount of up to 40.3 billion Yuan. From the perspective of domestic bond market credit risk supervision and early warning mechanism, rating is not objective, and tracking is not timely also rating methods are backward. Therefore, with the development of big data and other technologies, it is urgent to study credit risk supervision methods suitable for the domestic bond market. On the basis of combing the development of domestic bond market and analyzing the current situation of domestic credit rating, this paper combines the results of theoretical research at home and abroad, the information available in the domestic market, big data mining and automation technology, based on the financial and stock exchange information of listed companies, combined with BS option pricing theory, constructs KMV model.

1. Introduction

The U.S. sub-prime debt crisis in 2008 quickly spread to the world. In 2009, the sovereign debt crisis in Greece had a dramatic impact on the economic development and social stability of Greece and the EU. After 2010, a series of debt crises occurred in Europe. From the perspective of foreign bond market, a wide range of credit crisis is likely to continue to occur. Although a series of credit crises in Europe and the United States have had a certain impact on China, they have not directly impacted the domestic financial system. Relying on the power of scientific and technological information, China's financial market has made rapid development in recent years. Under the guidance of the government, the domestic bond market plays an important role in helping the development of the real economy, increasing social jobs, solving the financing problems of enterprises, and providing investors with diversified investment products. However, the domestic financial market is still facing several major problems. For example, the financing problems of small and medium-sized enterprises need to be solved urgently, also the credit risk of real estate credit in the banking system is increasingly serious, then the credit situation of local government debt is further deteriorated, and China's economy faces increasing uncertainties in the external environment. In this case, the healthy and stable development of bond market is of great significance to the reform of domestic financial market and the development

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of national economy. However, risk monitoring and the management system of the domestic bond market have not kept pace with the development of the domestic bond market. In November 2013, the "11 Zhangjiang smecn1" issued by Shanghai Zhangjiang science and technology defaulted, which attracted the attention of the regulators of the domestic bond market. In 2014, five bonds defaulted in the domestic bond market; by 2015, the number of domestic bond defaults increased to 19, involving 11.7 billion Yuan; in 2016, the number of domestic bond defaults reached 79, with the default scale exceeding 40.3 billion Yuan. With the advent of many bond maturities, domestic bond default events are likely to enter the high-risk period. A series of default events show that there are serious problems in China's bond market, such as incomplete information disclosure, not objective rating, not timely tracking, and relatively backward rating methods. Therefore, with the development of big data and other technologies, it is urgent to study credit risk supervision and early warning methods suitable for domestic bond market.

2. Merton Model

Merton's model first assumes that the value VT of a company's assets follows the LTO stochastic process.

$$\frac{dV_t}{V_t} = \mu d_t + \sigma dG_t \tag{1}$$

Where σ represents the volatility of the change of the return on assets of the company, while μ stands for the instantaneous return on assets of the expected company, and GT reflects a standard Wiener process. Then Vt gives expression to the value of the company's total assets at time t, while DT means the value of the non-redeemable zero-coupon bond with a residual maturity of T and a face value of m at time point t, and Et represents the option value. The three relationships can be expressed as follows.

$$V_t = D_t + E_t \tag{2}$$

Suppose that there are only two kinds of securities in a company, what are, one is a zero-coupon bond with a face value of F and a remaining maturity of T, and the other is a stock held by the owner. The debt treaty stipulates that if the company fails to pay its debts in accordance with the agreement on time, the creditors will be entitled to all the assets of the company according to law, and the shareholders of the company will have nothing. In addition, before the company has paid off its debts, it is prohibited for the company to issue any new shares or new debts with priority, and it is not allowed for the company to repurchase shares or distribute dividends in any form before paying off its debts. The value of the bond at maturity of the debt treaty is

$$D_T\ (V,T)=\min(V_T,F) \tag{3}$$

Assuming that the only channel of financing of the company other than the bonds is equity, the value of risk compensation obtained by the bondholders is the value of European options sold based on the value of the company. The face value f of the bond is the price when the option is executed, and the remaining term t of the bond is equal to the term of the option. When the owner of the company exercises the right when the bond matures, the bondholder obtains

$$D_T=F-\max(F-V_T,0) \tag{4}$$

The value of options held by the owners of the company is

$$E_T(V)=\max(0,V_T-F) \tag{5}$$

Using Black Scholes model option pricing method and Merton theory to price credit risk bonds, we get the following expression.

$$E_t(V,T,\sigma,r,F)=V_t\,\mathrm{N}(d_1)-Fe^{-r(T-t)}\,\mathrm{N}(d_2) \tag{6}$$

$$d_1=\frac{\ln(\frac{V_t}{F})+(r+\frac{\sigma^2}{2})(T-t)}{\sigma\sqrt{T-t}}$$

And $$d_2=d_1-\sigma\sqrt{T-t}$$

$$\mathrm{N}(y)=\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{y}e^{\frac{-u^2}{2}}du$$

Thus, in the case of risk neutral, the value of the bond at the beginning is obtained.

$$\begin{aligned}D_0(V,T)&=Fe^{-rt}-[-\mathrm{N}(-d_1)V_0+Fe^{-rt}\mathrm{N}(-d_2)]\\&=\mathrm{N}(-d_1)V_0+Fe^{-rt}\mathrm{N}(d_2)\end{aligned} \tag{7}$$

According to the above expression, the default probability of credit risk is

$$\mathrm{P}(V_T<F)=\mathrm{N}\left(\frac{\ln(\frac{F}{V_0})-(\mu-\frac{1}{2\sigma^2})T}{\sigma\sqrt{T}}\right) \tag{8}$$

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Default margin CST (T) is

$$CS_t(TV_T<F)=\frac{1}{T}\ln[\mathrm{N}(d_2)+\frac{V_t}{Fe^{-rt}\mathrm{N}(-d_1)}] \quad (9)$$

Merton model is based on the option pricing method to approximate the risk spread of credit bonds. The interest rate risk structure in the model is an important supplement to the traditional interest rate term structure. The shortcomings of Merton model are as follows.

(1) First of all, there are too many assumptions in the model, which is quite different from the real market situation.

(2) The model regards the total assets of a company as a kind of assets that can be traded continuously. However, in the real market, the total assets of a company cannot be traded as frequently and quickly as stocks.

(3) The model assumes that the risk-free interest rate has a level and fixed structure, which is inconsistent with the reality. This will result in a huge difference between the credit spread calculated later and its theoretical value.

3. Background and Principle of KMV Model

KMV model is a credit risk measurement and early warning model developed by KMV company in 1993 based on MM theory and B-S Option pricing model. It can predict and update the probability of the occurrence of credit risk events according to the change of market value of Listed Companies in the stock market.

KMV model belongs to the modern credit risk measurement model, which has the following advantages compared with the technology of statistical measurement of tradition, neural network and other quantitative analysis methods.

(1) KMV model is based on Merton model, which is more theoretical. For it first combines the theory of modern corporate finance and theory of options. Based on the theory of modern corporate finance, the model makes full use of the relatively reliable and objective financial information of the company. Using option pricing theory for reference, the default is regarded as a call option for the value of the company's assets. using B-S Option Model for quantitative analysis, the company's financial information and the stock price in the capital market to calculate the default distance and probability, so as to measure the company's credit risk, which is prompter and more objective.

(2) KMV model uses the stock market information to update, and the financial information is objective. Because the stock of listed company has new trading information every day, the stock market value of listed company will adjust dynamically according to the expectation of investors every day. KMV model uses the market value of assets to calculate the equity value, which is more realistic. Therefore, KMV model is a dynamic model, which can capture the expected credit risk information in time. In the calculation of debt, the latest financial data is used, which is more objective, but also the attribute characteristics of debt.

(3) KMV model does not require high market efficiency. This model has been applied in many markets of emerging stock, such as Europe and the United States. When the interested parties of enterprises trade through insider information and institutional investors' information and R & D advantages, the stock price of related companies will change greatly. The fluctuation of the company's stock price contains a lot of information that investors analyze and judge the company's prospects.

KMV model is based on MM theory and B-S Option pricing model. There are many hypotheses in these two theories. In fact, these hypotheses may not be fully satisfied, so the results of the model may be distorted, which makes KMV model have the following shortcomings in practical application.

(1) KMV model is based on the theory of B-S model, which is constrained by the basic assumptions of B-S model. The model assumes that the stock price of the target company satisfies the stochastic process, investors are allowed to sell short in the market transaction. And there is no tax in the transaction process, also the risk-free interest rate remains unchanged for a long time, and there is no arbitrage opportunity in the market.

(2) KMV model assumes that the borrower's default is inconsistent with the reality. KMV model assumes that when the asset value is less than the debt value, the borrower will default. However, in reality, in many cases, the lack of liquidity will also cause the borrower to default; even if the value of the company is less than the value of the liabilities, because of the inconsistency of the maturity of the debts, the owners of the company may not choose to default in the face of the debts due first.

(3) KMV model assumes that the borrower's return on assets is normally distributed, and the change of the company's market value is the Brownian motion. However, these assumptions are not satisfied in many capital markets. The KMV model's assumption of the company's capital structure is inconsistent with the reality of the domestic market. The model does not consider the existence of China's non tradable shares. Although this paper has made some development in this area, it still cannot guarantee its perfection.

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4. Conclusion

This paper draws the following conclusions:

(1) The rating results of credit risk rating agencies in the domestic bond market have a guiding role for investors in identifying credit risk. And market investors have made a response to the measures taken by credit rating agencies to reduce the credit rating of bonds or issuers. Some investors perceive credit risk earlier than credit rating agencies.

(2) According to the KMV model, the default distance of a domestic listed company's bond issuer cannot be directly converted into a default probability if it does not obey the normal rules. When the model parameters change, the default distance will change greatly with the distribution of the credit status of the debtor. As the credit status of the changes of issuing entity, the expected value of the default distance has a certain regularity.

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ARTICLE

Implications of Fama-French Models and Critical Evaluation of Cost of Equity Approach in Explanation of Variations in Expected Stock Returns

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ABSTRACT

CAPM theory that solves relationship between asset return and asset risk for potential investment project by CML and SML, is illustrated in the first section as an introduction of further analysis of corporate valuation techniques. Fama and French three factor model is perceived as a revision of CAPM, although it stills has severe weaknesses. CAPM theory solves relationship between asset return and asset risk for potential investment project by CML and SML.

1. Capital Asset Pricing Model (CAPM) as Foundational Concepts of Portfolio Theory and Asset Pricing

Capital Asset Pricing Model (CAPM) is based on Markowitz securities investment portfolio theory, as cornerstone of modern corporate finance by giving accurate forecast of relationship between asset risk and rate of return. CAPM theory solves relationship between asset return and asset risk for potential investment project by CML and SML. CAPM model enables us to make reasonable corporate valuation for those assets not traded in public market (Xiao et al, 2017). One of CAPM assumptions is that investors could evaluate investment portfolios reasonably according to expected rate of return and variations during a certain period (Anon, 2005). It is assumed that all investors are rational in economic sense and pursuing minimum variation of investment portfolios. CAPM also assumes that all investors tend to choose portfolios that generate higher expected rate of return. Capital market is indivisible and all investors have free access to related information given market effectiveness (Xiao et al, 2017). Assets are divisible unlimitedly and all investors could sell assets of arbitrary amount. Investors could borrow or lend at risk free rate without transaction cost and tax.

There are massive amounts of investors and each investor's wealth is marginal as for all investors' aggre-

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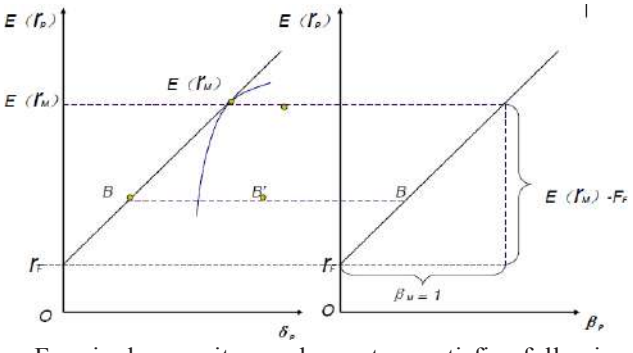
gate wealth. All investors are price takers and each one's behavior could pose marginal effect on security price in completely competitive market. Given single period investment, all investors could plan their own investment portfolio of all publicly traded financial assets and any asset that could be lent or borrowed at fixed free interest rate (Bai et al, 2019)[1]. Since all investors master Markowitz securities investment portfolio theory, they have homogeneous expectations on securities expected return, standard deviation, covariance and economic conditions. All investors have the same expected return vector and covariance matrix (Bai et al, 2019). Then, there is a single frontier border and single efficient frontier. Given allowance of short selling, investors could invest in risky assets by funds from short selling assets. Adding risk free assets to the risky assets portfolio forms a new portfolio and increasing investment opportunities greatly change original efficient frontier. Thus, the optimal portfolio changes and the new efficient frontier is a straight line.

CAL reveals equilibrium relationship between expected return and standard deviation of efficient investment portfolios[2]. Single risky security itself is an ineffective portfolio always under CAL. SML confirms equilibrium relationship between single securities expected return and portfolio covariance (Mishra and O'brien, 2019). SML contains all securities and all portfolios. Thus, SML contains market portfolios and risk free assets. Since expected return is negatively correlated to security price, risky asset pricing formula is giving as following.

$$\mathrm{E}(R_i) = R_f + [\mathrm{E}(R_M) - R_f] * \beta_{iM}$$

$$\beta_{iM} = \frac{\mathrm{cov}(R_i, R_m)}{\sigma_M^2}$$



For single security, random return satisfies following functions.

$$r_i = r_f + \beta_{iM} * (r_M - r_f) + e_i$$

$$e_i = cov(e_i, r_m) = 0$$

Investment portfolio i risk is divided into diversified risk and systematic risk.

$$\sigma_i^2 = \beta_{im}^2 * \sigma_m^2 + \mathrm{var}(e)$$

Using CML could price arbitrary security.

$$\mathrm{E}(r_i) = r_f + \frac{E(r_m - r_f)}{\sigma_m} * \sigma_i = \frac{E(r_m) - r_f}{\sigma_m} * \beta_{im} * \sigma_m = r_f + \beta_{im} * [E(r_m) - r_f]$$

$$E(\tilde{r}_q) = E(\tilde{r}_{zcm}) + \beta_{qm}[E(\tilde{r}_m) - E(\tilde{r}_{zcm})], r_i \le E(\tilde{r}_{zcm}) \le r_b$$

$$E(\tilde{r}_q) = E(\tilde{r}_{zcl}) + \beta_{qe}[E(\tilde{r}_l) - E(\tilde{r}_{zcl})] = r_i + \beta_{qe}[E(\tilde{r}_e) - r_i]$$

$$E(\tilde{r}_q) = E(\tilde{r}_{zcB}) + \beta_{qe'}[E(\tilde{r}_B) - E(\tilde{r}_{zcB})] = r_B + \beta_{qe'}[E(\tilde{r}_{e'}) - r_B]$$

CAPM implies pricing any investment portfolio that for any investment portfolio q, any investment portfolio on the upper frontier and zero covariance portfolio, particularly market portfolio and a portfolio zcm or tangible portfolio e and L, pricing formulas are:

2. CAPM's Empirical Problems May Reflect Theoretical Failings, the Result of Many Simplifying Assumptions

CAPM's empirical weaknesses are reflected in application in investment assessment. In the first place, beta of the project itself is not equivalent to corporate

beta and the two coefficients have to be separated. A way to differentiate the two coefficients is that company beta is regarded as beta of different activities, weighted average of fair value of related assets in the activity (Campbell et al, 2018). However, it is hard to obtain the fair value through different types investment activities. Another difficulty is that corporate capital structure is hard to access in order to calculate related gearing ratio. For instance, many of companies have relatively complicated capital structure, namely, its have different corporate financing methods (Campbell et al, 2018)[3]. At the same time, some companies are likely to have bond funds raised in non-public market or using complicated financing methods, such as convertible bonds (Abdoh and Varela, 2018). Besides, in order to simplify calculation, it is assumed that beta coefficient is zero, this assumption is likely to raise uncertainty of discount rate of the project.

When CAPM is used to evaluate project investment, there is an assumption that regulated investment period is one year. Although this assumption is convenient for data comparison, this assumption is far from empirical evidence that actual investment is usually crossing standard periods. The biggest problem of CAPM in empirical study is that fluctuation is defined as risk (Sanghera, 2010)[4]. This practice misleads many people. Asset fluctuation is

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fluctuation itself and risk refers to the possibility of not reaching expected return. Fluctuating asset is not necessarily risky and diversification makes it not a problematic issue (Sanghera, 2010)[5]. Investment portfolio theory uses irrelevance of assets. In this way, return could be raised given the same uncertainty or portfolio fluctuation could be lowered given low rate of return.

In empirical study, if we use monthly data to do research, beta could not be accurately assessed because of short time span and market value effect. If using monthly data to estimate beta, no matter in economic sense or statistical sense, beta has been turned effective. In empirical study, from long-term perspective of CAPM, CAPM makes sense. For such equilibrium model, only in long term, its constraints occur (Sanghera, 2010). CAPM is fundamentally a long-term problem. Thus, many research studies use short-term data and generate totally opposite conclusions against CAPM. As pointed by Jagannathan and McGrattan (1995), academic circle is keen on linear relationship between short-term risk and expected return and its circulations. But in long run, CAPM effectiveness has been proved[6]. For instance, in empirical study done by Ang and Chen (2007), they used annual data from 1926 to 2001 and research conclusion is effective to support CAPM definitely beta keeps changing. Some other empirical studies could defuse Fama and French's criticism of CAPM. For example, empirical study by Amihud in 1993, they use GLM instead of OLS methods to re- calculate and they found that beta still reflects asset price. Kim (2015) found that Fama's method has variable errors[7]. Kim (2015) supported CAPM using UK data and they concluded that Fama and Fench two-step validation method mainly accounts for failure of CAPM. Kim initiated a stunning research in 2015 and he stated that CAPM is a failed reform in finance sector. However, a large portion of his statement is excessive.

CAPM core theory concentrates on existence of market portfolio that is required to include all risky assets and use market value as weighted factor. However, Roll (2012) stated that this kind of market portfolio is inaccessible. For most tests of CAPM, they are tested by using stock market index that fails to contain all stocks. This problematic issue leads to difficulty to test CAPM. However, this does not mean that CAPM is a complete failure and the problem goes to the empirical study itself. Roll (2012) stated that market model is the core of CAPM and if we cannot find such portfolio, it is a malarkey to test CAPM. From his perspective, test of CAPM has to guarantee that any arbitrary investment portfolio meets requirement of return-risk curve. This requires that all portfolios have the linear relationship between return and risk. However, Roll (2012) casted doubt on CAPM that whether we could find a market portfolio as a benchmark. Actually, we partially acknowledge that CAPM is wrong to some extent. But the issue is that what the extent of failure is on earth or whether CAPM is always or occasionally wrong. Most perspectives claimed that CAPM is a complete failure[8]. The right way is to realize weaknesses of CAPM and we have to use CAPM carefully.

A main problem of CAPM is that we are too strict towards beta calculation. Garcia et al (2011) assumed that we live in the world that completely meets CAPM assumptions and there are merely two scenarios of CAPM, poor state and wealthy state[10]. In order to simplify discussion, they thought there were merely two stocks in the market, stock A and stock B. Their beta keeps changing in the market and risk premium keeps changing in the market. This last column lists average condition. We notice that two stocks have different beta and have the same risk premium, which is inconsistent to what CAPM defines (Garcia et al, 2011). Then, we find that no matter which state we are in, the whole market could meet requirement of CAPM. This example tells is that if beta volatility is ignored, our understanding of CAPM has trouble.

3. Drivers of Expected Stock Returns and Various Multifactor Models to Capture These Return Patterns as Suggested by Fama and French

Fama French three factor model is an extended version of CAPM. CAPM states that there is a positive linear relationship between expected return and market beta, and higher beta, higher asset expected return. Market beta necessarily explains for expected security asset (Boutabba, 2015)[11]. However, Eugene Fama and Kenneth French added two factors to CAPM, namely SMB also referred to size factor, and HML, book to market factor, also called value factor. They claimed that market factor, SMB and HML could better explain for asset weighted average return. When CAPM has been raised, many researchers found that beta could not completely account for expected asset return.

Some empirical studies show that size, book to market ratio, leverage ratio and E/P could well explain for stock return (Boutabba, 2015)[12]. However, CAPM could not explain for these abnormalities. Thus, Fama and French published an article in 1992 as a synthesizer of further improvement of CAPM. They took these factors into consideration and did research on stocks publicly traded on NYSE, AMEX and NASDAQ during the period from 1963 to 1990 besides financial stocks about how their average

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weighted return relates to these factors.

In cross-section regression model, the four factors showed strong accountability for average weighted return. In multi-factor linear regression, market value and book value have accountability of the other two factors in explanation of weighted average return and evolve as decisive variables of explaining for average return (Trigeorgis and Lambertides, 2014)[13]. In 1993, Fama and French published another article Common Risk Factors in Returns on Stocks and Bonds as a benchmark of establishment of three factor model. In this literary works, they illustrate that three factors could better explain for weighted average stock returns and intercept of regression analysis is approaching to zero. This implies that market factor, size factor and the ratio of book to value market value together explain for stock returns.

Fama French three factor model is listed as following.

$$E(Rit) - Rft = \beta i[E(Rmt - Rft)] + siE(SMBt) + hiE(HMIt)$$

Rft refers to risk fre rate of return at time t

Rmt refers to market rate of return at time t

Rit is return of asset i at time t

E(Rmt) − Rft is risk premium

SMBt is a size factor short for simulated small minus big rate of return at time t

HMIt is short for high minus low rate of return, book to market value ratio at time t beta, si and hi are coefficients of three factors

regression model is listed as following.

$$Rit - Rft = ai + \beta i(Rmt - Rft) + SiSMBt + hiHMIt + \varepsilon it$$

However, we are consciously aware of the fact that the three-factor model does not mean completeness of capital asset pricing model. In empirical studies, there are some omitted factors in three factor model, including short term reversion, medium term momentum, fluctuation, skewness and gambling (Trigeorgis and Lambertides, 2014)[14].

Fama and French examined returns of publicly traded stock on NYSE, AMEX and NASDAQ in spite of financial stocks. They categorized stocks into ten groups by market value and divide each market value portfolio into ten squads by beta. And then a hundred of stock portfolios are given. As shown in table 1, in horizontal sense, beta value increases from left to right, from low to high. In vertical sense, from up to bottom, market value increases, from small to large. The number in table 1 represents monthly return of each investment portfolio. Then, we could see a phenomenon that is against what we have learned from CAPM that for each investment portfolio, beta in each column is not equal. However, CAPM states that beta is the single factor that accounts for stock return, which is equivalent to the statement that is beta equals, stock return is the same. As market value decreases, stock return goes up (Clark and Kassimatis, 2011). That is to say, for each group, beta, small market value stocks witnessed greater return than stocks of large market value.

Table 1

Average Returns, Post-Ranking βs and Average Size For Portfolios Formed on Size and then β: Stocks Sorted on ME (Down) then Pre-Ranking β (Across): July 1963 to December 1990

Portfolios are formed yearly. The breakpoints for the size (ME, price times shares outstanding) deciles are determined in June of year t (t = 1963–1990) using all NYSE stocks on CRSP. All NYSE, AMEX, and NASDAQ stocks that meet the CRSP-COMPUSTAT data requirements are allocated to the 10 size portfolios using the NYSE breakpoints. Each size decile is subdivided into 10 β portfolios using pre-ranking βs of individual stocks, estimated with 2 to 5 years of monthly returns (as available) ending in June of year t. We use only NYSE stocks that meet the CRSP-COMPUSTAT data requirements to establish the β breakpoints. The equal-weighted monthly returns on the resulting 100 portfolios are then calculated for July of year t to June of year $t + 1$.

The post-ranking βs use the full (July 1963 to December 1990) sample of post-ranking returns for each portfolio. The pre- and post-ranking βs (here and in all other tables) are the sum of the slopes from a regression of monthly returns on the current and prior month's returns on the value-weighted portfolio of NYSE, AMEX, and (after 1972) NASDAQ stocks. The average return is the time-series average of the monthly equal-weighted portfolio returns, in percent. The average size of a portfolio is the time-series average of monthly averages of ln(ME) for stocks in the portfolio at the end of June of each year, with ME denominated in millions of dollars.

The average number of stocks per month for the size-β portfolios in the smallest size decile varies from 70 to 177. The average number of stocks for the size-β portfolios in size deciles 2 and 3 is between 15 and 41, and the average number for the largest 7 size deciles is between 11 and 22.

The All column shows statistics for equal-weighted size-decile (ME) portfolios. The All row shows statistics for equal-weighted portfolios of the stocks in each β group.

	All	Low-β	β-2	β-3	β-4	β-5	β-6	β-7	β-8	β-9	High-β
Panel A: Average Monthly Returns (in Percent)											
All	1.25	1.34	1.29	1.36	1.31	1.33	1.28	1.24	1.21	1.25	1.14
Small-ME	1.52	1.71	1.57	1.79	1.61	1.50	1.50	1.37	1.63	1.50	1.42
ME-2	1.29	1.25	1.42	1.36	1.39	1.65	1.61	1.37	1.31	1.34	1.11
ME-3	1.24	1.12	1.31	1.17	1.70	1.29	1.10	1.31	1.38	1.26	0.76
ME-4	1.25	1.27	1.13	1.54	1.86	1.34	1.06	1.41	1.17	1.35	0.96
ME-5	1.29	1.34	1.42	1.39	1.48	1.42	1.18	1.13	1.27	1.18	1.08
ME-6	1.17	1.08	1.53	1.27	1.15	1.20	1.21	1.18	1.04	1.07	1.02
ME-7	1.07	0.95	1.21	1.26	1.09	1.18	1.11	1.24	0.62	1.32	0.76
ME-8	1.10	1.09	1.05	1.37	1.20	1.27	0.98	1.18	1.02	1.01	0.94
ME-9	0.95	0.98	0.88	1.02	1.14	1.07	1.23	0.94	0.82	0.88	0.59
Large-ME	0.89	1.01	0.93	1.10	0.94	0.93	0.89	1.03	0.71	0.74	0.56

As for book to market value ratio, same stocks are divided into ten groups. As for their return, in horizontal sense, from left to right, market value ratio increases and return goes up. However, this is not completely owed to beta. As shown in beta column, there is insignificant difference, which is equivalent to the statement that given insignificance of beta, those stocks of higher book to market value ratio, witnessed higher returns (Clark and Kassimatis, 2011). This is against what CAPM tells.

Table 2

Properties of Portfolios Formed on Book-to-Market Equity (BE/ME) and Earnings-Price Ratio (E/P): July 1963 to December 1990

At the end of each year $t - 1$, 12 portfolios are formed on the basis of ranked values of BE/ME or E/P. Portfolios 2–9 cover deciles of the ranking variables. The bottom and top 2 portfolios (1A, 1B, 10A, and 10B) split the bottom and top deciles in half. For E/P, there are 11 portfolios; portfolio 0 is stocks with negative E/P. Since BE/ME and E/P are not strongly related to exchange listing, their portfolio breakpoints are determined on the basis of the ranked values of the variables for all stocks that satisfy the CRSP-COMPUSTAT data requirements. BE is the book value of common equity plus balance-sheet deferred taxes, A is total book assets, and E is earnings (income before extraordinary items, plus income-statement deferred taxes, minus preferred dividends). BE, A, and E are for each firm's latest fiscal year ending in calendar year $t - 1$. The accounting ratios are measured using market equity ME in December of year $t - 1$. Firm size ln(ME) is measured in June of year t, with ME denominated in millions of dollars. We calculate each portfolio's monthly equal-weighted return for July of year t to June of year $t + 1$, and then reform the portfolios at the end of year t.

Return is the time-series average of the monthly equal-weighted portfolio returns (in percent). ln(ME), ln(BE/ME), ln(A/ME), ln(A/BE), E(+)/P, and E/P dummy are the time-series averages of the monthly average values of these variables in each portfolio. Since the E/P dummy is 0 when earnings are positive, and 1 when earnings are negative, E/P dummy gives the average proportion of stocks with negative earnings in each portfolio.

β is the time-series average of the monthly portfolio βs. Stocks are assigned the post-ranking β of the size-β portfolio they are in at the end of June of year t (Table I). These individual-firm βs are averaged to compute the monthly βs for each portfolio for July of year t to June of year $t + 1$.

Firms is the average number of stocks in the portfolio each month.

Portfolio	0	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Panel A: Stocks Sorted on Book-to-Market Equity (BE/ME)													
Return	0.30	0.67	0.87	0.97	1.04	1.17	1.30	1.44	1.50	1.58	1.92	1.83	
β	1.36	1.34	1.32	1.30	1.28	1.27	1.27	1.27	1.27	1.29	1.33	1.35	
ln(ME)	4.53	4.87	4.89	4.56	4.47	4.38	4.23	4.06	3.85	3.51	3.06	2.65	
ln(BE/ME)	−2.22	−1.51	−1.09	−0.75	−0.51	−0.32	−0.14	0.03	0.21	0.42	0.66	1.02	
ln(A/ME)	−1.24	−0.79	−0.45	−0.05	0.20	0.40	0.56	0.71	0.91	1.12	1.36	1.75	
ln(A/BE)	0.94	0.71	0.68	0.70	0.71	0.71	0.70	0.68	0.70	0.70	0.70	0.73	
E/P dummy	0.29	0.15	0.10	0.08	0.08	0.08	0.09	0.09	0.11	0.15	0.22	0.36	
E(+)/P	0.03	0.04	0.06	0.08	0.09	0.10	0.11	0.11	0.12	0.12	0.11	0.10	
Firms	89	98	209	222	226	230	235	237	239	239	126	117	

At last, they divided stocks into ten groups by market value and divide each group into ten segments in comparison (Clark and Kassimatis, 2011)[15]. As following table shows, from left to right, market value increases from low to high and increases from up to down, small to large. It is obvious that the stock portfolios in top right corner of table V, their return is much higher than others. The stock port-

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folios feature small market value and high book value.

Table 3

Average Monthly Returns on Portfolios Formed on Size and Book-to-Market Equity; Stocks Sorted by ME (Down) and then BE/ME (Across): July 1963 to December 1990

In June of each year t, the NYSE, AMEX, and NASDAQ stocks that meet the CRSP-COMPUSTAT data requirements are allocated to 10 size portfolios using the NYSE size (ME) breakpoints. The NYSE, AMEX, and NASDAQ stocks in each size decile are then sorted into 10 BE/ME portfolios using the book-to-market ratios for year $t-1$. BE/ME is the book value of common equity plus balance-sheet deferred taxes for fiscal year $t-1$, over market equity for December of year $t-1$. The equal-weighted monthly portfolio returns are then calculated for July of year t to June of year $t+1$.

Average monthly return is the time-series average of the monthly equal-weighted portfolio returns (in percent).

The All column shows average returns for equal-weighted size decile portfolios. The All row shows average returns for equal-weighted portfolios of the stocks in each BE/ME group.

		Book-to-Market Portfolios									
	All	Low	2	3	4	5	6	7	8	9	High
All	1.23	0.64	0.98	1.06	1.17	1.24	1.26	1.39	1.40	1.50	1.63
Small-ME	1.47	0.70	1.14	1.20	1.43	1.56	1.51	1.70	1.71	1.82	1.92
ME-2	1.22	0.43	1.05	0.96	1.19	1.33	1.19	1.58	1.28	1.43	1.79
ME-3	1.22	0.56	0.88	1.23	0.95	1.36	1.30	1.30	1.40	1.54	1.60
ME-4	1.19	0.39	0.72	1.06	1.36	1.13	1.21	1.34	1.59	1.51	1.47
ME-5	1.24	0.88	0.65	1.08	1.47	1.13	1.43	1.44	1.26	1.52	1.49
ME-6	1.15	0.70	0.98	1.14	1.23	0.94	1.27	1.19	1.19	1.24	1.50
ME-7	1.07	0.95	1.00	0.99	0.83	0.99	1.13	0.99	1.16	1.10	1.47
ME-8	1.08	0.66	1.13	0.91	0.95	0.99	1.01	1.15	1.05	1.29	1.55
ME-9	0.95	0.44	0.89	0.92	1.00	1.05	0.93	0.82	1.11	1.04	1.22
Large-ME	0.89	0.93	0.88	0.84	0.71	0.79	0.83	0.81	0.96	0.97	1.18

Thus, in statistical sense, we could conclude that market beta at least not capable of explaining for stock returns differential, while market value and book value are two persuasive factors in explanation of weighted average return of stock portfolios.

4. Exante Cost of Equity in Analyst' Earnings Forecasts and Stock Prices to Overcome the Limitations Associated with Using Traditional Asset Pricing Models Stock Dividend Growth Model

Calculation function is K=D/P+G

Where K is cost of equity, D is expected annual stock dividend, P is normal stock price and G is normal stock dividend growth rate.

Related data could be found in annual financial statement by trend analysis and linear regression analysis. If common stocks have financing cost when issuing, the calculation function has to deduct financing expense.

Calculation function is K=D/P*(1-f)+G where f is financing cost ratio.

$$V = \sum_{t=1}^{\infty} \frac{D_t}{(1+k)^t}$$

Where V is internal value of each stock, Dt is expected stock dividend value at time t, and k is expected discount rate or expected rate of return.

The calculation function shows that stock internal value is the aggregate of discounted present value of future cash flows (Yagil, 1986). According to special dividend payout method, DDM model has some simplified versions of functions.

4.1 Zero Dividend Growth Model

Given circumstance of zero dividend growth, future dividend payment is fixed amount. Calculation function is V=D0/k where V is corporate value, D0 is current stock dividend and K is investors' required rate of return or cost of capital (Yagil, 1986).

4.2 Permanent Dividend Growth Model

If stock dividend growth is g, calculation function is V=D1/(k-g) where D1=D0(1+g) is stock dividend of next round rather than current stock dividend.

If dividend growth rate changes, the calculation function could evolve as two periods, three periods and multi period dividend growth models. The two period dividend growth model assumes that at time 1, stock dividend grows at g1 and then stock dividend growth rate turns to g2 after the first period (Cornell, 1999)[16]. The three-period dividend growth model is quite similar as the two-period stock dividend model but for an extra time point and an extra growth rate of g3.

Stock price is determined by supply and demand in market economy. Stock price does not necessarily reflect real intrinsic value of the corporation but fully reflected in the company's continuing business operation (Cornell, 1999). Thus, corporate stock value is decided by stock dividends paid annually. Then, the amount of stock dividend is directly related to business operation. Stock intrinsic value is directly decided by the company's business performance (Cornell, 1999). It is of great importance in reality to doing research on a company's intrinsic value to make strategic investment decision. This DDM has positive meaning of overcoming partial weaknesses of conventional capital asset pricing model (Cornell, 1999)[17].

4.3 Discount Cash Flow Model (DCF)

$$P = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t}$$

P refers to corporate value, n is the company's operation life, CFt is cash flow at time t and r reflects discount rate of expected cash flows.

DCF model has an advantage that the result reflects intrinsic value of the company by calculating discounted free cash flows. DCF model is the most reasonable valuation technique. A weakness of DCF model is that future cash flow cannot be confirmed accurately and the calcu-

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lated result is greatly affected by discount rate (Cornell, 1999).

5. Conclusion

In brief summary, we partially acknowledge that CAPM is wrong to some extent. But the issue is that what the extent of failure is on earth or whether CAPM is always or occasionally wrong. Most perspectives claimed that CAPM is a complete failure. The right way is to realize weaknesses of CAPM and we have to use CAPM carefully. Fama French three factor model has a severe weakness. Market beta at least not capable of explaining for stock returns differential, while market value and book value are two persuasive factors in explanation of weighted average return of stock portfolios.

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REVIEW

Analysis of Fintech Regulation Based on G-SIBs Fintech Index

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ABSTRACT

At present, Chinese financial supervision departments are constrained by information asymmetry and higher supervision costs, so their effectiveness in the ever-changing financial supervision needs to be improved urgently. Based on the G-SIBs fintech index, this paper analyzes the scores of fintech r&d, promotion, application and other indicators, aiming to explain the necessity of fintech regulation, and puts forward measures to strengthen fintech regulation.

1. Introduction

The essence of fintech is to innovate the products and services provided by the traditional financial industry through various technological means, which can improve the efficiency and effectively reduce the operating cost. During recent years, the development of fintech is changing with each passing day. The earliest online payment, credit card and so on have brought huge impact to traditional financial institutions such as Banks. Due to the features of Global Systemically Important Banks (G-SIBs), which are large scale, high complexity, business in the event of risk events will bring impact to regional or Global financial system, the characteristics of coupled with financial technology, relying on the connectivity of the Internet function, in the event of financial risk is likely to lead to systemic risk. Fintech regulation is a powerful hedge against these risks.

2. The Necessity of Strengthening Financial Technology Regulation

The G-SIBs fintech index is based on 29 global systemically important Banks released by the financial stability board (FSB) in 2018. Based on their research and development, promotion, application, input, impact, foundation and risk control, the index is built on the theory of core competitiveness. According to the analysis of the G-SIBs fintech index [1], it can be found that for the bank of China, its fintech influence ranks 1st, but its fintech risk control ability ranks 14th. China construction bank ranks 4th in fintech influence while 6th in fintech risk control. We can see that there are still great hidden risks in China's global systemically important Banks -- financial technology risks are likely to spread rapidly with the influence of Banks, so financial regulation is particularly important. Although China holds the regulatory orientation of "prudent supervision and inclusive innovation" for fintech, and encour-

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ages fintech innovation under the premise of risk control, this is far from enough.

The deficiency lies in the financial supervision of China's financial high-tech should be more financial technology supervision. The concept of fintech regulation echoes the concept of fintech, which is narrowly defined as the regulation of the financial sector with new Internet technologies such as cloud computing, big data and block chain.

From this we can see that the Chinese version of the "regulatory sandbox" that first landed in Beijing earlier this year is a kind of fintech regulation. So-called "sandbox" regulation, that is, by providing a "miniature" is a market and "loose" version of the regulatory environment, for regulators to very clear regulatory system and the dialectical relationship of financial innovation, timely find market excesses and detrimental to the interests of the consumers in the long run due to limited innovation regulations, and for the first time hearing and guide, really makes appropriate regulatory supervision, supervision and so on innovation spirit to the ground[2]. But what is different from other countries' "regulatory sandboxes" is that, at present, China's "regulatory sandboxes" will include licensees. Zhicheng Zeng, deputy director of the central bank's sales and management department, introduced that the "regulatory sandbox" must be a licensed institution, which is the bottom line, will not be included in the online lending, virtual currency and other institutions. Meanwhile, projects launched by fintech companies in partnership with licensees are not excluded.

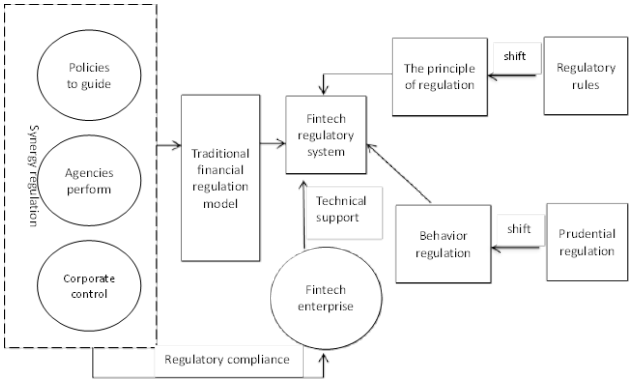

Figure1 the schematic diagram of fintech supervision system construction diagram

3. Ways to Strengthen Financial Technology Regulation

3.1 Supervision over Financial Institutions and Participants

According to the G-SIBs fintech index, China ranks first in terms of fintech promotion ability, among which China construction bank ranks first. The index "ratio of mobile banking users to total users" plays a big role in the ranking. Fintech promotion ability measures the comprehensive level of Banks' fintech innovative products and services, which is reflected in the marketing ability, market acceptance and benefits of the products and services. However, advertising is a common means of promotion. Therefore, in order to reduce the risk of illegal and illegal financial advertisements and other bad information brought by the promotion of fintech, the supervision of its promotion is essential. Xiaoming Pan and QuJun play a role of credit supervision proposed by way of innovative financial products advertising regulation is one of the types of financial regulation of science and technology, the current social credit system construction of the east wind, and utilization of enterprise credit information publicity system, the people's bank of financial credit information database platform, will verify the financial illegal financial advertisements include negative information of the person in charge of enterprises and related compression illegal financial advertisement of living space, promote financial advertising responsibility main body regulate the behavior of financial advertisements. Financial science and technology promotion, of course, is not only an advertisement of a kind of form, but can be seen everywhere, therefore, only the supervision of the financial responsibility main body advertising is not enough, what is more important to the national financial literacy cultivation and improve science and technology, market the vast majority of small and medium-sized investors, on the one hand, they should be protected as an investor market, on the other hand also want to monitor them, especially using the financial technology can quickly find their early irregularities, avoid "herding effect" and other loss or inconvenience to the society.

3.2 Strengthen the Combination of Technology and Regulation

According to the G-SIBs fintech index, China's global systemically important Banks rank low in terms of fintech investment capacity. This ability is mainly measured by the number of equity investments banks make in fintech companies. The reason for the insufficient development in this respect of China may be the imperfect legal guarantee and the immature market. Direct investment in fintech companies is an effective way to accelerate the fintech development of Banks, which would requires financial supervision, especially fintech supervision. Two main body mentioned here, Banks and financial science and technology enterprises, the market for their regulatory

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model determines the financial investment, research and development of science and technology as well as the achievements transformation. For Singapore application mode of financial supervision of science and technology, innovation, which makes financial technology companies, financial institutions and government departments work together, assessing the rationality of the new achievements and maneuverability, the transformation of the research and development[3]. It can be seen that the improvement of fintech regulation can start from strengthening the knowledge sharing and supervision exchange between existing regulatory authorities and market players such as fintech enterprises, and improving the technical level of regulators.

New regulatory tools such as regulatory sandboxes and innovation accelerators have emerged in fintech regulation. According to the United Nations, financial regulatory authorities in about 20 countries and regions have explored the application of regulatory technology, more than 50 countries and regions have established, set up or plan to set up regulatory sandboxes, and more than 40 countries and regions have set up innovation offices or innovation accelerators. Therefore, the application of technology to financial regulation is a trend and it is also an effective way to strengthen regulation. Strengthening the combination of technology and regulation will not only help improve the efficiency of financial regulation, but also promote the emergence of these new regulatory tools, which will help countries and regions learn from each other in terms of financial regulation and improve the level of global financial regulation.

3.3 Reduce Security Risks

Since global systemically important Banks are interconnected in terms of their own business scale, global and fintech rely on Internet connectivity, once financial risks occur, they are likely to lead to systemic risks. Xiangdong Qi, chairman of Beijing qi anxin technology co., LTD., expressed that the fintech system faces three security risks: data leakage, APT attack and "internal ghosts" when he attended the forum on financial risk monitoring and security technology and the opening ceremony of the key laboratory of mutual fund security in Beijing. Therefore, in terms of fintech regulation, it is imperative to reduce security risks. Qi cited data breach risks such as a series of cyber security incidents involving more than 24 million pieces of financial and banking data, including a large amount of loan and mortgage information, that were leaked by major U.S. Banks in January. For example, the hacker group Lazarus has long launched attacks against the bank's SWIFT system and once stole us $81 million from the central bank of Bangladesh. This is the risk of APT attack. APT attacks are mainly domestic and foreign APT organizations that launch attacks against targets in China, among which financial institutions are the second largest target of APT attacks. The third risk is the inside job. More than 85 per cent of cyber security threats come from the internal, far outweighing the damage caused by hacking and viruses, according to a report by the FBI, CSI and others. For example, APT "golden eye", which has been stealing sensitive information of financial transactions for a long time, once disguised as a legitimate software development enterprise, stole sensitive trading information of other financial institutions through malicious programs, and then used such trading information as investment intelligence to earn illegal excess profits.

It can be seen that the development of fintech is facing a severe, complex and changeable new security situation, so the regulation of fintech needs to focus on reducing security risks such as data leakage. According to qi xiangdong's "pharmacy", compared with the traditional network security through isolation, repair the boundaries of the technical method to establish a new technical method; New warfare tools with the third generation of network security technology at the core, new warfare capabilities with data-driven security at the core, new tactics with zero trust architecture at the core, and "four new strategies" with "people + machine" security operation system at the core. A "three-in-one" system of three-dimensional linkage of high, medium and low three-in-one capabilities has been established. The low-position capability is equivalent to the first-line combat troops, the median is equivalent to the command center, and the high-position is equivalent to the information center; Synchronous planning, construction and operation, providing a complete set of solutions from top-level design, deployment and implementation to operation management; The mechanism of users, cloud service providers and security companies restricting each other, the third party security companies are responsible for checking loopholes to fill gaps, the cloud service providers form a strong "three-party checks and balances". The above is to eliminate vulnerabilities to a maximum degree, and thereby reduce security risks of effective measures

4. Conclusion

Through the above analysis, we find that fintech regulation is indispensable to the development of fintech, and the appropriate regulatory model is conducive to the transformation of fintech achievements. Based on the analysis of fintech investment, promotion, influence and risk control

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ability of China's global systemically important Banks in the G-SIBs fintech index, it can be concluded that the fintech supervision of financial institutions and participants that plays the role of credit supervision and promotes the national scientific and technological literacy; Strengthening the combination of technology and regulation and reducing security risk are important measures to strengthen fintech regulation.

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REVIEW

Research and Overview of Beyond Meat's Disruptive Innovation

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ABSTRACT

In the past, meat is considered to be a luxury because of its high price that not everyone can afford, which only enjoyed on special days or festivals. However, it has become a daily necessity for life nowadays with the rapid economic development, an essential ingredient in every staple in the restaurant or home kitchen, and the main source supply for people to increase energy. Besides, as health education launched, "how to eat healthily" has become the most significant difficulty that needs to be solved for every family. There is no doubt that the market has been increasing and the demand for meat has been growing with the population growth all over the world. The market value of processed meat is expected to rise from 714 billion U.S. dollars in 2016 to over 1.5 trillion dollars by 2022. Poultry is the most popular kind of processed meat, with a 38 percent share of the global market and red meat, which includes pork and beef, takes up about a 33 percent share. From the official report of the worldwide meat market, the quality and the inflated price of meat have become the most concern of the majority people, who deem it as the primary source of protein and nutrition supply.

1. Introduction

Since the 1970s, a wave of vegetarianism has swept the West. At first, it was just a hippie movement and started on a small-scale population, basically in the profound effect of religion. By the 1990s, tens of millions of Americans had declared themselves vegetarians, accounting for 3-6% of adults (figures from different sources vary widely)[1] and the proportion of vegetarians has exceeded 5% In many Western countries. Although it is still a minority, it is far from an alternative. With the development of economy and popularity of education, more and more people have realized the significance of healthy diet and are trying to find a balanced dietary structure that can provide them a compelling and energetic body to adjust fast-paced life efficiently (Maurer,2010).[2] Meanwhile, people's increasing concerns of ecological environment and how mankind lives in harmony with the animals have prompted the movement of vegetarianism, which can protect the living beings in nature and decrease the waste and air pollution caused by farms (Appleby,1999).[3]

Many people indeed become healthier after adopting a vegetarian dietary structure. However, few people can eat vegetarian food for life, and it is tough for people who give up halfway to start eating meat again. Especially in the recent two years, the low-carbon ketogenic diet has become more popular abroad, which encourages eating meat and also fat, contrary to a vegetarian diet in many ways. As ketogenic diets that promote eating meat become more popular, many vegetarians are beginning to waver,

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and some experts who have previously recommended vegetarian diets are also turning around and recommending ketogenic diets for meat because recent studies have demonstrated the real benefits of eating meat (Fox & Ward,2008). A recent study from the Humane Research Council showed that 84% of vegetarians eventually gave up their vegetarian diet and switched to meat. More than half (53%) ate meat again within a year, and almost one third (30%) persisted for less than three months, which indicates that people's deep desire for meat is not only come from physical but also mental. Of the 11,000 participants, 88% said they had never tried a vegetarian diet and had eaten meat all the time.[5] 10% admitted that they had tried a vegetarian diet, but later returned to eating meat. Only 2% were vegetarians from beginning to end. The former vegetarians (who then ate meat) agreed that "Chicken is the most difficult meat to resist and can't stop eating it." The original intention that some vegans choose vegetarian is to lose weight and keep healthy. Since vegetarian food is light and strictly no fat, they are easy to get hungry and choose unhealthy food like processed food. Meanwhile, vegans are accessible to a lack of vital substances for the body, such as high-quality protein, B12, and choline, which may also cause anemia and inflammation. In sum, there are various reasons that impel vegetarian back to regular diet and begin to eat meat, and the demand of meat has been increasing from earliest times to the present day (Moe,2011).[5]

2. What Is the New Offering?

Figure 1. Types of Beyond Meat products

To cope with the above problems, artificial meat emerged as a substitute and became more popular in recent years (Bonny, 2015).[6] Beyond Meat, founded by Ethan Brown, Dr. Fu-hung Hsieh and Harold Huff of the University of Missouri in 2009, is a company focus on artificial meat. They used legumes and other vegetable proteins as raw materials to arrange vegetable proteins into meat fiber structure by using heating, cooling and pressurizing, and continuously carried out experiments and improvements, making it closer to the composition of animal meat fiber, so that the taste of vegetable meat and meat closer, which called "vegetable meat". The company has created a "chemical repository" of numerous plant proteins and fats. Thus scientists have chosen the best combination from that: pea protein as protein and coconut oil as the fat. To imitate the taste more similar, vegetarian meat pie also added some modified wheat starch and potato starch, so that it tastes more naturally. Depends on the advantages of healthy ingredients and the same taste as real meat, the company has launched several products based on "vegetable meat," mainly focus on beef, pork, and poultry. As the figures at the front shows, they have six types of products on sale right now. They are Beyond Burger, Beyond Beef, Beyond Brat Original Sausage, Beyond Hot Italian Sausage, Beyond Feisty Meat, and Beyond Beefy Beef. The star product is the Beyond Burger which contains 20 grams of protein, no soybean, gluten, and no cholesterol. Its saturated fat content is half of the traditional lean fat ratio of 80/20 beef hamburger steak. Nevertheless, the product cannot avoid the vulgar claim that it does not contain GM ingredients, and Bill Gates has always advocated the idea that GM foods are healthier and more environmentally friendly. By 2013, its products had been sold at Whole Foods Market, an American food supermarket chain. In addition to the United States, its products also appear in Canada, the United Kingdom, and other countries. But this year they stopped selling chicken products, saying they were developing better alternatives. With the gradual acceptance by more people, there are new entrants cropping up across the market and take a specific place in the artificial meat industry. Still, the company claimed that they have absolute advantages on healthier protein source that is beneficial for human and it's coloring comes from beet extract, rather than heme from the leghemoglobin like in the Impossible patty (Amanda,2019).[7]

In addition to reducing fat by 15% and cholesterol by 90%, the significance of "artificial meat" may lie in maintaining the Earth's energy pyramid in a broader sense. A senior engineer at the Beijing Environmental Protection Monitoring Center has professionally introduced the benefits of eating less meat on micro-blog: human consumption of plant-based food is the first nutritional level in the food chain. In the energy flow of food web, the efficiency of energy transfer from one trophic level to the next trophic level is about 10%. In the energy transfer between vegetable protein and animal protein trophic levels, ecological efficiency alone loses 90% of the energy from grains.[8] Beyond Meat highlighted these concepts when promoting its products: to solve four increasingly serious

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problems caused by livestock production, namely human health, climate change, and natural resources, through the transformation from animal meat to a vegetable meat diet. "We believe there are better ways to feed the planet." This is Beyond Meat's introductory opening remark, an idea that fits the company's investor Bill Gates' consistent environmental behavior (Hopkins & Dacey, 2008).[9]

3. Results

Asking the question, how has the Beyond Meat changed the market? Actually, whenever a product or an invention has been capitalized, the market will be affected in a certain way. In the case of Beyond Meat, there are two markets that have been changed since the expansion of beyond meat.

One of the changing markets is the plant-based meat market. According to a recent Nielsen report, annual U.S. sales of plant-based meat jumped 42 percent between March 2016 and March 2019 to a total of $888 million, compared to 1% growth of traditional meat (Trefis Team, 2019).[10] This indicates that the plant-based meat market is rising rapidly since 2016, and during this process, Beyond Meat changed the plant-based meat market in all respects.[11]

Figure 2. Beyond Burger on meat session

Figure 3. Traditional Vegetable-Meat in Vegan session

First, Beyond Meat changed the target customer for the plant-based meat industry. Traditionally, plant-based meat has mainly been designated on "vegan" areas. But even with the rapidly growing movement of Veganism, only 3.4 percent of the population are vegetarian (Meyer, 2019).[12] Consider the price of natural fresh vegetables, and those vegetable lovers, the real buyers of plant-based meat, were extremely limited. In 2016, rather than competing with traditional brands for limited customers, Beyond Meat decided to target "meat reducer" and "omnivores." They introduced the beyond burger, which is similar to the real beef in many aspects such as texture, flavor, red meat juice, etc. This decision ignited the whole plant-based meat industry and obviously Beyond Meat put the beyond burger on regular meat sessions which competes with authentic beef burgers. Once they stepped to the regular meat market, they got more chances to sell their products to all kinds of customers because approximately 97 percent of the population in the world is the "omnivores." On the other hand, one key thing that must be mentioned the technology that makes the fake meat able to compete with real beef. They use the beets to give the burger a red-meat appearance and the coconut oil with cocoa butter to make the white marbling which not only looks like animal proteins but also tastes as juicy as real beef (Beyond Meat, 2019).[13] At the industry level, this new vision introduced by Beyond Meat also brought fast movers like Impossible meat and drew more attention from investors which accelerated the evolution of plant-based meat industry.

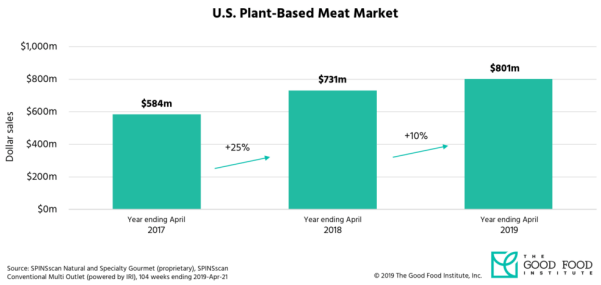

Figure 4. U.S. plant-based meat market

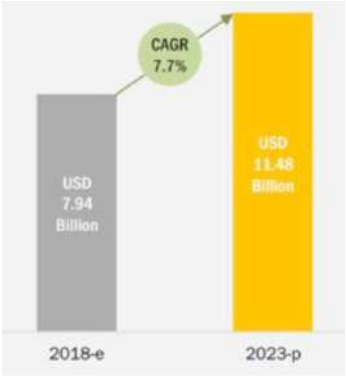

Figure 5. U.S. meat market

The other market that has been changed is the meat market. Based on Figure 6 and 7, during 2018, the meat market in the United States was still ten times larger than the plant-based meat market. Also, Figure 8 indicates that

the meat market in the U.S. will grow steadily in the following years. With no doubt the meat market is still a giant, stable market with a room of improvement comparing to the plant-based meat market; therefore, the meat market is changed less obviously and mainly on a macro level. In general, Beyond Meat provided a possibility to the whole meat market that plant-based meat could replace meat; nevertheless, this possibility may not occur in the following decades due to the sustainable ability of animal raising the industry and the meat demand of the whole world. Also, the revelation of Beyond Meat may set them to an awkward situation.[14] The original vegan buyers may feel uncomfortable with the "bleeding" and juiceless of the beyond burger. They may stop buying and even criticize Beyond Meat for its movement. On the other hand, it is tough to transfer a meat lover to a daily beyond burger customer because the beyond burger is more expensive than a regular burger and there are still some differences between the beyond burger and the real meat.

Figure 6. Meat VS meat substitute

All in all, even though Figure 8 shows a trend that people are willing to switch to the meat substitute side, there is no guarantee for the rapid growth of meat substitute in the next few years. In real life, it will be a long-term process for Beyond Meat to take over a significant number of customers from the meat industry due to price, quality issues, and the acceptance of ordinary people.

Figure 7. Beyond Meat return since IPO

Should the Beyond Meat consider to be a disruptive innovation? The answer is based on how to define the disruptive innovation. Once Beyond Meat became the first-ever plant-based meat public traded company, media and analysis started to obsess with this company and plant-based meat industry. According to Wall street analysist, the plant-based market would potentially grow to be a 140 billion U.S. dollar market.[15] There are also a lot of media claimed that they think Beyond Meat is going to ignite the whole meat industry shortly by their disruptive innovation. The author believes that, it is a solid disruptive innovation, but it has been overvalued. Beyond Meat will not replace the traditional meat market in at least the next 30 years and may be placed by better technology such as cell-based meat anytime. Even with all those conditions, I still consider it to be a disruptive innovation for several reasons.

Figure 8. Process of Chinese vegan duck

Figure 9. Traditional Chinese vegan duck

Figure 10. Beyond Meat lab

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Figure 11. Beyond burger

Firstly, even though people in China and Indian started to make fake meat such as vegetarian duck and vegetarian chicken by isolating soybeans in a traditional manual way a thousand years ago, modern plate-based meat can be identified as a different creature comparing to the conventional vegetarian meat. Traditionally, people manually fold the bean skin first, roll it into a shape they want, and steam it. After it is cooked, they must season or marinated hardly to hide the "bean flavor." As the figure shows, it may finally look like a decent meat meal, but it will taste very different than a regular meat meal which is impossible to replace the daily meat. On the contrary, the research of Beyond Meat is more like an interdisciplinary science. As the figure shows, Beyond Meat research team study the material and process of the beyond meat in a professional lab first. They basically process vegetable proteins by stirring, decomposing, expanding, steaming, cooling first, and then they will use the beets, the coconut oil, and the cocoa butter to create the flavor, juiceless and texture similar to real meat. Those technologies were works of many scientific areas such as Biochemistry, Synthetic Biology, Macromolecular physics, etc. Those technologies are not related to the traditional meat market at all. Originated from the ancient vegetarian meat, Beyond Meat was certainly disruptive innovation by introducing a new way to substitute regular meat.

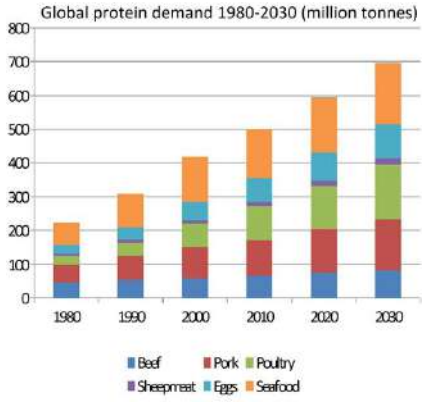

Figure 12. Global protein demand 1980-2030

Secondly, by the developing of the whole world, especially the third world countries, Figure 12 shows that the demand for the protein was increasing and will increase steadily every year. Unfortunately, the costs of livestock in many ways have been a complicated problem for the whole world. In recent years, basic on the research from Cowspiracy shows that livestock system holds 45 percent surface area of the entire world and 51 percent of global greenhouse gas emissions are driven by livestock rearing and processing. People started to feel nervous for the environment and the price rising for the proteins. On the contrary, Beyond Meat's products are one of the best substitute meat products on the market now, and it is possible for them to improve their technology and able to produce plant-based meat with extremely low cost one day. With time elapsing, traditional meat rearing will become more costly and cause more pressing environmental issues while the technology of plate-based meat will improve. There is a chance that plate-based meat could entirely substitute meat. This also makes Beyond Meat a disruptive innovation.

Thirdly, Beyond Meat didn't focus directly on the traditional customers of the meat market on this stage. Their focus was "Meat reducer" and "Omnivores." Those people want to buy less meat and are looking for some substitute either healthier or cheaper. The decision of Beyond Meat would avoid direct competition with traditional meat manufacturer since those people are not their clear customers once Beyond Meat can improve their products in two ways. First, it is to lower the cost of the beyond meat, and second, it is to improve the texture and flavor of the plate-based meat further. They will able to satisfy the majority of the bottom meat market. By that time, Traditional livestock rearing industry may still have advantages on some exclusive meats like Wagyu steak or Iberian pork, but the majority of the market will be taken. In real life, this might be a very long-term process for Beyond Meat, but the potential is there. Therefore, Beyond Meat' movement is a sign of the first stage of disruptive innovation, in my opinion.

4. Conclusion

In general, Beyond Meat is overall a very successful company so far. Beyond Meat successfully became the first plant-based meat listed company. This obviously shows investors' interests and the trend of the venture market.

Stepping into details, First Beyond Meat was one of the first movers of the new plant-based meat industry. According to the principle of disruptive innovation, large companies choose to overlook disruptive technologies

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until they become more attractive profit-wise (Butler, 2019).[16] So far Beyond Meat was investigated by Bill Gates, Donald Thompson and rose as much as 800 percent from its initial price. It means that this disruptive innovation and the plant-based market were recognized by the majority of investors. Secondly, even though Beyond Meat has several strong competitors like Impossible meat now and the competitors have more capital and better tech team. But Beyond Meat caught their first-mover advantage and managed to cooperate with KFC, HelloFresh.

Figure 13. Impossible burger vs beyond burger

All in all, with no doubt, Beyond Meat was doing great so far and has been successful. But the future of this company is very uncertain in many ways. First, in my opinion, Beyond Meat has been overvalued. People expected them to take a great part market by 2023, but in reality, this company will soon face two significant challenges. The first challenge is in domestic. Impossible Meat already raised 300 million U.S. dollars which were three times of Beyond Meat before and also managed to cooperate with some large food franchises like Burger King and me. Also, Impossible Meat started their business two years later than Beyond Meat, but most customers claimed that the Impossible burger tasted a lot more similar to beef than the Beyond burger.[17] One important truth is that Beyond Meat has been lost money until now. The retail product revenues are not enough to pay for research and maintenance fees; therefore, the investor always values this company as a tech company rather than a food manufacturer. The real value of their technology is a question now, especially all of those fast followers also have the right products and strong technical teams.[18,19] Once a few companies have better outcomes than Beyond Meat, Beyond Meat will not be able to lead the new plant-based meat industry like Tesla.

Figure 14. Chinese plant-base meat lab

Figure 15. Chinese plant-based meat mooncake

The second one is about international trades. China and Indian will be the most significant potential market for plant-based meat in the future for two reasons. One reason is that there is a rapidly increasing for the demand of meat since the developing of China and Indian. The second reason is that they lake enough surface for livestock rearing. Unfortunately, the main product from Beyond Meat is the beyond burger which requires only pan-fried, but China and Indian people like to stew or fry proteins. After a long time of stewing or high temperature fried, the beyond meat will break down and taste like bean soup. Beyond Meat might not notice that many companies in Asia like ZhenRou, Starfield have already started to study the project of how to create Asian plate-based meat. Zhenrou even has already begun to sell a plant-based meat mooncake in China as the pictures at the front shows. Impossible Meat also intended to start a business in China next year.[20] Beyond Meat will not able to be the first mover in Asia. The Chinese government also started to support this project in many ways since the unbalance intake of typical Chinese food. Base on the government research, Chinese intake too much meat protein every day; therefore, according to the Chinese government plan, the national dietary intake

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of animal protein should be reduced by 50% by 2030. In this context, there are huge potentials in Chinese plant-based meat research and products.[21]

Also, on the one hand, the price of plant-based meat is a huge obstruct. Right now, the price range of beyond burger and Impossible burger is between the cost of regular beef and Wagyu beef; nevertheless, the regular beef still tastes better than plant-based meat. It is hard to persuasive customers to eat plant-based meat daily unless it is both cheaper and healthier than animal meat. On the other hand, cell-based meat also has great potential to substitute animal meat, and it will not be too hard to have the same taste as real meat. The big obstruct for cell-based meat is the cost.[22] Once this problem has been solved, Beyond Meat and plant-based meat will have another strong competitor.

All in all, the author believes that Beyond Meat will keep expanding until their technology has been surpassed, and Beyond Meat is a great disruptive innovation to both traditional plant-based meat industry and meat industry. Their products are suitable for the environment and human health. But their future potential is limited so far, and their technology has been overvalued. They must be cautious with their research direction and marketing strategy because the fast followers from all over the world are chasing them quickly.

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REVIEW

A Study on the Effectiveness of Chinese Farmers' Participation under the Background of Rural Rejuvenation

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ABSTRACT

The strategy of Rural Revitalization is an important strategic measure to comprehensively promote rural modernization in the period of building a socialist modernization country with Chinese characteristics. In essence, a farmer's political participation is, of course, to inevitably build a new socialist countryside, cultivate new socialist farmers and realize socialist rural modernization. This paper attempts to explore the promotion and efficient realization of farmers' political participation from three ways of improving the subject ability of political participation, first, to improve subject ability; second, to guarantee object conditions, third, and to create the proper environment. And this paper illustrates that the modernization of rural areas requires the modernization of farmers' ideology and political consciousness. The comprehensive promotion of the modernization of peasants' ideology and political consciousness is embodied in the practice of political participation.

1. Introduction

In the strategic plan for Rural Revitalization (2018~2022), it is pointed out that "adhere to the dominant position of farmers" and "improve the participation of farmers". The main position and participation degree of farmers are not only reflected in the behavior of economic production, but also the practice of political participation. Huntington thinks that political participation is "the activity that the common people try to influence the government's decision-making" [1]. Because of the current situation that the degree, level, and quality of political participation of farmers in China are not high, it is of great significance to explore the focus of this participation of the farmers in China and find the correct path foe the farmers, to improve the quantity and quality of political participation of farmers, and to strive to achieve political civilization in China, especially in rural areas.

2. The Improvement of Farmers' Ability of Participation

As the main body of rural political participation, farmers must have the corresponding quality and ability. To cultivate and improve their quality from the aspects of participative consciousness, knowledge and ability is one of the key factors for farmers to give full play to their subjective initiative of political participation. The promotion of participative consciousness is the ideological guarantee of peasants' participation. For a long time, affected by the traditional Chinese feudal political culture, it restrained the farmers' subjectivity and enthusiasm, and their partic-

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ipative consciousness was indifferent. From the aspects of democracy, law and decision-making consciousness of farmers, we can promote the awareness of the political participation of farmers.

2.1 The Promotion of Farmers' Democratic Consciousness

A free and democratic life is the way to material prosperity.[2]The key to strengthening the peasants' democratic consciousness lies in abandoning the feudal traditional ideology, cultivating the modern citizen consciousness and high political enthusiasm, cultivating the spirit of the country's master, and actively participating in the country's political decision-making. We should get rid of the feudal autocratic ideology, which has been influenced for thousands of years and strive to cultivate the modern democratic consciousness and spirit. By re-examining the traditional feudal autocratic political culture in China, we should study and understand the concept of democracy in modern society.

2.2 The Improvement of Farmers' Legal Consciousness

Law is a set of abstract rules about justice that condenses the community [3].The enhancement of farmers' legal consciousness is strong support to improve farmers' awareness of political participation. To realize the organic combination of the rule of law and the rule of a village by law, the degree of the rule of law in rural areas and the legal consciousness of farmers play an important role in the development the enhancement of the consciousness of political participation of farmers. To strengthen the farmers' legal consciousness, we must let them actively participate in the activities of popularizing the law in rural areas, learn the knowledge of laws and regulations, strive to make everyone in rural areas learn the law, know the law, abide by the law and use the law. In practice, we should take the initiative to protect our political rights and interests with legality.

2.3 The Enhancement of Farmers' Decision-Making Consciousness

The development of the farmers is related to the development of the country and the improvement of the decision-making ability of the country is related to the future and destiny of the development of the country. Therefore, farmers should fully realize that participating in national political decision-making, the formulation of national major policies is a matter of vital interest for farmers. Because "the countryside is not only a regional concept but also a political concept. Farmers are not only a professional identity but also a policy identity."[4] Therefore, farmers should cultivate a sense of active participation in local government political decision-making.

2.4 The Cultivation of Teamwork Ability

Farmers' participation in national government decision-making requires team consciousness, team spirit, and team cooperative ability. Because the declaration of policies in line with the actual situation of a village or town is the crystallization of the collective wisdom of all members of the whole village or town [5]. Collective discussion and collective decision-making should be carried out when major policies are related to the development of the whole village and town and the vital interests of farmers. At the same time, we often organize and carry out some collective competitions and activities to enhance farmers' sense of team cooperation and the ability of unity and cooperation.

2.5 The Cultivation of Insight

Political decision-making requires political participants to have some insight into current affairs. Only with the certain ability of political and current affairs insight, can farmers catch some new information and situations related to local political decision-making everywhere, so that in participating in political decision-making, they can put forward practical and effective decision-making proposals according to local reality and development needs.

2.6 Cultivation of Organizational Ability

Organizational capacity is an important factor in determining the efficiency of the political participation of farmers. The stronger the organizational capacity of farmers is, the more opportunities they have to participate in politics. To cultivate the organizational ability of farmers, we can establish trade union organizations, Communist Youth League organizations, service associations, supervision associations and other rural groups in rural areas to cultivate the organizational ability of farmers.

3. The Object of Participation: Shaping the Good Image of the Government

As the object of the government to mobilize farmers as the main participants to actively participate in the decision-making of local political affairs, brainstorming, we must shape a good social image.

3.1 Enhance the Authority of Local Government

The authority of the government always affects the trust

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of the masses. To be able to enhance the authority of the government we must, first of all, establish a practical and effective power operation system to ensure the effective implementation of power. Secondly, we need to cultivate high-level and high-quality managers to ensure that power is exercised for the benefit of the people. Once the government of the people, by the people, for the people, the farmer will actively participate the government decision-making.

3.2 Improve Government Credibility

The credibility of the government determines the people's trust, recognition, and participation in the government. To establish the credibility of the government, first of all, the purpose of the government's political decision-making must be based on the fundamental interests of the farmers, and establish the idea of serving the farmers. Secondly, the government should respect the will of farmers before making any decision, and reflect the will of farmers. Finally, the local government's public affairs management behavior and the activity must solve the farmer's actual problem and the difficulty earnestly.

3.3 The Creation of a Good Hard and Soft Environment

Farmers' political participation must be guaranteed by an appropriate environment. Starting from the general environment of the whole society and focusing on the hardware environment, cultural environment, and institutional environment, we should create an in-depth and accurate environment for farmers' political participation.

3.3.1 Improve the Hardware Environment of Farmers' Political Participation

Modern democratic consciousness and political participation consciousness are based on a certain level of economic development. Because "in a society, the level, form, and basis of political participation are closely related to the level of socio-economic development. A high level of political participation is always accompanied by a higher level of development."[6] The level of economic development is closely related to the level of political participation. The higher the level of social and economic development, the higher the level of political participation will be. We can achieve this by, first of all, ensuring the stability of the land as the source of farmers' life, because most of the economic sources of farmers come from the land. Secondly, we should strengthen the construction of rural infrastructure because the improvement of a rural education level is based on the construction and completion of educational and cultural infrastructure.

3.3.2 Improve the Modern Information Network Technology in Rural Areas

With the development of national social economy, the influence of modern information network on the life of farmers is increasingly important. Therefore, the local government should strengthen the construction of modern information technology in rural areas, and improve the construction and improvement of modern information transmission tools such as television, radio, newspapers and magazines, and postal services. These technological advances can apply to modern government management, establish e-government, enhance the function of government online, facilitate the effective and quick handling of rural affairs, and facilitate the political and social communication of farmers. The interactivity of modern information networks makes the majority of farmers turn from the original "audience" to "interlocutor".

4. Smooth the channels of farmers' Political Participation

Local governments ensure the smooth channels of farmers' political participation in various ways. First of all, they ensure the realization of the political election activities of farmers. A political election is an important manifestation of farmers' political participation and the main channel of their political participation. Secondly, to ensure the realization of political contact activities of farmers. Farmers' political contact means that farmers directly or indirectly reflect the situation, put forward suggestions, opinions or criticisms to local government leaders in the form of individuals or organizations, and participate in the decision-making of local government.

4.1 Perfecting the System Environment of Peasants' Political Participation

People's opinions come from their system [7]. The level and extensiveness of peasants' political participation are fundamentally determined by the security and stability of the institutional environment. Therefore, we must improve the mechanism of rural farmers' political participation, dredge the channels of participation, and constantly promote the institutionalization, legalization and procedural construction of farmers' political participation.

4.2 Strengthen the Construction of Democratic Political System

First, to encourages and guides the farmers to participate

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in the local decision-making through institutionalization, to play the role of the democratic self-government system of rural grass-roots masses in self-education, self-service, self-management and other aspects of farmers. Second, we should combine the construction of a rural grassroots democratic political system with the economic development of the region, so that farmers can truly realize democratic decision-making, democratic management, and democratic supervision. Third, democratic election, decision-making, and management should be carried out in all rural affairs.

4.3 Improve and Perfect the Democratic Supervision Mechanism

Democratic supervision is an important content stipulated in the organization law of the villagers' committee of the People's Republic of China. It is also an important guarantee for farmers to supervise various undertakings in rural areas according to law and is directly related to the enthusiasm and initiative of farmers' political participation.

We should establish a system of open village affairs, open financial system, democratic appraisal system, cadre responsibility system, and cadre accountability system, "so that farmers can fully know the government, and create conditions for strengthening the supervision of farmers."[8]. In this way, we should establish a perfect supervision and restraint mechanism for the power operation of village cadres, ensure the effective supervision of village cadres by farmers, enhance the confidence of farmers in participating in politics and stimulate their enthusiasm.

5. Conclusion

The strategy of rural rejuvenation is a strategic decision made by China for the development of rural modernization. First, through the promotion of farmers' democratic consciousness, legal consciousness and decision-making consciousness, the awareness of farmers' political participation will be enhanced, and the ability of farmers' organization, insight and cooperation will be enhanced. Second, farmers' active participation in politics is conducive to enhancing the authority, credibility and sense of responsibility of the government. Third, the government should improve the rural hardware and software environment, and then we can more effectively realize the political participation of farmers, safeguard their own rights and interests, and promote the modernization of rural areas.

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REVIEW

How to Recognize and Measure Compound Financial Instruments?

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ABSTRACT

Basing on the Xiaomi case, this paper discusses the most appropriate accounting treatment of compound financial instruments under the framework of *International Financial Reporting Standards (IFRS)* and how other comprehensive income (OCI) plays important role in it. Overall, this paper provides some references for policymaker to standardize financial instruments standard.

1. Introduction

In June 2018, as soon as the prospectus of Xiaomi was disclosed by China Securities Regulatory Commission, Xiaomi's "puzzling" financial statement triggered heated discussions. According to *International Financial Reporting Standards (IFRS)*, in 2017, Xiaomi lost 43.9 billion-yuan RMB. But if Xiaomi didn't apply IFRS, it would profit 5.4 billion-yuan RMB. The difference between the two is 49.3 billion-yuan RMB, of

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which only convertible redeemable preferred shares can increase profit by 54.1 billion-yuan RMB. And if exclude the influence of convertible redeemable preferred shares, Xiaomi's owners' equity can change from negative 127.2 billion-yuan RMB to positive 34.3 billion-yuan RMB. So what is Xiaomi's real financial situation? Is a serious loss or a high profit? Is it insolvent or powerful?

The essential question is the accounting treatment of compound financial instruments. When measuring convertible redeemable preferred shares, Xiaomi indicated that because it didn't meet the "fixed-to-fixed" standard of *International Accounting Standard No. 32 (IAS32)* and the credit risk of the liability led to little fair value changes, it was recognized as financial liabilities which were measured at fair value and fair value changes were included in profit and loss. According to the principle of prudence, Xiaomi divided its convertible redeemable preferred shares into financial liabilities. But this debt has neither legal significance nor economic essence, it's only a pure theoretical virtual debt. And it eventually triggered "puzzling" financial statement problems and reduced accounting information quality.

There are three approaches to improve the accounting information quality of compound financial instruments: (1) including fair value changes into OCI; (2) introducing "mezzanine equity" items; (3) recognizing the value of debt component and equity component separately. Among three approaches above, the first has stronger operability and the lowest cost. The second has greater advantages in understandability and impact on financial statement. The third has week operability and strict constraints. Under the framework of IFRS, the first approach is the most preferable one. Accordingly, this paper focuses on the first approach.

2. The Most Appropriate Accounting Method of Compound Financial Instruments

About the initial recognition of financial instruments, for compound financial instruments with dual attributes of liability and equity, it has always recognized as financial liabilities or equity instruments integrally. Under the ideology of "minimization of equity", since the recognition of equity instruments needs to meet the "fixed-to-fixed" standard, most enterprise recognizes them as financial liabilities in practice. However, it will lead to a situation that "the more profit the enterprise makes, the more loss it confirms", which is contrary to business logic. In fact, we can adopt another thought – "maximization of equity" to relax the conditions for the recognition of equity instruments, not only restricted to "fixed-to-fixed" standard.

In terms of the subsequent measurement of financial instruments, throughout the financial instrument standards, the fair value changes are either included in profit and loss or OCI. From Xiaomi case, we can see that the former has huge impacts on profit indicators, and there will be a puzzling phenomenon of "the higher the valuation of enterprises, the more serious the loss". *IFRS No.9 - Financial Instruments* points out that OCI should be used to reflect the fair value changes caused by the credit risk of financial liabilities of enterprises themselves. The revised Accounting Standards for Business Enterprises No. 22 - *Recognition and Measurement of Financial Instruments*, which is promulgated by Chinese Ministry of Finance in March 2017, stipulates that financial asset should use fair value through OCI (FVTOCI) to measure if its holding purpose includes both contract cash flow and sale.

An enterprise's income includes core income and transitory income.[1] OCI arises from random walk processes and should be zero in expectation, thus belongs to transitory income.[2-3] According to a recent study, earnings-price-ratio is the most effective measure of firm value in China.[4] OCI has value relevance, is correlated with stock price.[5-6] Thus, although OCI should be transitory in nature, it also can favor investors to make decisions. That's means, if use FVTOCI to recognize and measure compound financial instruments, the accounting information quality also improved. Taken together, we can consider expanding the scope of OCI appropriately to allow the fair value changes caused by earnings expectations and non-tradable equity valuation, that is measure the investment at FVTOCI.[7] For the compound financial instrument that both for contractual cash flow and sale, FVTOCI can not only alleviate the illogical points mentioned above, but also reflect the large fluctuation of owner's equity when the amount of fair value changes is huge.

3. Summary and Conclusions

Xiaomi's "puzzling" financial statement have led us to reconsider the most appropriate accounting treatment of compound financial instruments. Under the framework of IFRS, this paper provides two solutions: The first is based on the concept of "maximization of equity", relaxing the conditions for recognizing financial instruments as equity instruments. The second is for financial instruments that both receive contractual cash flows and for sale, using FVTOCI to measure. OCI is closely related to the accounting treatment of financial assets. In the face of increasingly complex capital market and financial innovation, it is a good way to use OCI when dealing with complicated compound financial instruments. The application of OCI's mixed accounting measurement attributes

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not only improves the accounting information quality and useful for investors to make decision, but also reflect the integration of asset-liability view and income-expense view.[8] Overall, this paper provides some suggestions and references to policymakers on how to improve financial instruments standard.

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REVIEW

Regional Dialect Diversity and Corporate Strategic Aggressiveness

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ABSTRACT

As an important role of the regional culture, dialects have a significant influence on the corporate strategy. Diversity of dialects appears to move firms towards strategic radicalization by weakening the "hometown effect", enhancing innovation awareness, and increasing the diversification of business. Using A-share listed companies from 2006 to 2018 as sample, based on information from the annual financial statements, this paper argues that higher dialect diversity in the city where enterprise is located leads the corporate strategy to be more aggressive; and the mismatch between strategy and dialectal environment will have a negative effect on corporate performance. After a series of robustness tests and using instrumental variables to solve endogenous problems, the conclusions remain consistent. Further study indicates that the influence of dialect diversity on strategy is enhanced as managers' awareness of the dialectal environment increases, but is weaken if the enterprise is a state-owned enterprise or has larger scale. This research reveals the connection between dialect culture and corporate behavior form a strategic level, provides empirical evidence and enriches the literature for the traditional view of "culture influences strategy", and has significance on promoting the corporate strategic management practices.

1. Introduction

China is a multi-ethnic country, where multiculturalism coexists, and one of the manifestations is that Mandarin and dialect are parallel. In 1982, China wrote "the state promotes the use of Mandarin throughout the country" into the Constitution, but people still use dialects extensively in daily lives. Dialects have both instrumental and cultural attributes, on the one hand, is a vehicle for people's expression and communication and a carrier of information in economic activities; on the other hand, dialect is an important representative of regional culture and an important dimension of ethnic division and identification. The dual roles of dialects have a profound impact on socio-economic life.

There is no unified conclusion on the impact of dialect diversity on corporate behavior in the existing literature and most of which only focused on the impact at a specific aspect, and ignored the influence of dialect on the corporate strategy at the overall level. In practice, strategy determines the corporate business goals, development direction, and action plan (Porter, 1980), laying the cornerstone of the corporate long-term development. The enterprise cannot change the external environment, and its strategy must adapt to the status and trends of the external environment----The process of strategic selection is essentially a process of

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matching the internal characteristics of the enterprise with the external environment. In general, enterprises inevitably have problems of language communication in both internal and external communication, human resource management and trade negotiation. Moreover, local dialects are important tools for the enterprise to communicate internally and externally, which in turn affects the business development and strategic decisions of the enterprise. So, our research into the relationship between dialect and strategy would be interesting and necessary.

Based on this, the paper focuses on how dialect diversity becomes a key factor that cannot be ignored in the setting of corporate strategy, and further explores how this factor has a subtle influence on the enterprise's overall strategic setting as an external cultural environment.

2. Theoretical Analysis and Research Hypotheses

The management literature on corporate strategy typology is quite abundant, in which according to the degree of radicalization and according to the definition of Miles and Snow (2003), the corporate strategy is divided into prospector, analyzer and defender. Companies that implement different strategies have significant differences in their business models and organizational structures. The prospectors are keen on product creation, technology R&D, and market expansion. Therefore, they generally need to establish multiple branches or subsidiaries, which makes their organizational structure more fragmented and complicated. But a defender usually focuses on several existing products or services, with a more centralized organizational structure and a more stable management team. Bentley et al. (2013) used financial statement information to describe the above typology and received a wide range of recognition. Subsequently, a group of domestic and foreign scholars conducted researches on the relationship between corporate strategy and corporate financial behavior with reference to the measurement methods of Bentley et al. (2013) (Higgins et al., 2015; Habib, 2017).

But at the empirical level, the literature does not pay much attention to the impact of external environment on corporate strategic decisions, and to some extent ignores the existence of cultural factors, which gives room for this paper. The paper presents that the regional dialect diversity may affect corporate strategy via the following ways:

Firstly, dialect diversity can increase an enterprise's innovation awareness and risk appetite. The cultural diversity implied by linguistic diversity can bring about the collision and inspiration of different ideas, giving companies a stronger incentive to innovate. Therefore, in regions with more diverse dialects, companies may lay out more innovation activities. On the contrast, in areas where dialects are concentrated, companies will be subject to more non-institutional constraints when making strategic decisions, moreover, the cultural dependency formed by the connection of "township" also makes the enterprise tend to maintain stable operation due to the influence of "hometown preference" and "path dependence" when it expands abroad. The more informal external constraints the enterprise faces, the more it tends to be conservative.

Secondly, dialect diversity prompts the enterprise's business scope to passively expand. Lower dialect diversity leads to higher possibility of two groups speaking one dialect, so long-term relationships with business partners are more likely to develop in a region. Language has both cultural identity recognition and interpersonal communication functions, so it plays an important role in promoting business negotiations and sales contracting, and reduce transaction costs. Then the enterprise may be unwilling to waste such "dialectic advantages", tending to conduct business in a certain dialect area, and not having enough motivation for product or service innovation, making the corporate strategy more conservative. As companies in complex dialects have lost such advantages, in order to maintain competitiveness, they are more likely to expand their business out of local market, and then formulate a broader business expansion strategy, and diversify their business as much as possible to reduce their own risks.

Thirdly, dialect diversity weakens "hometown effect" and makes the organizational structure of enterprises more fluid. The natural psychological distance brought by dialect diversity will lead to the phenomenon of group exclusion. With the weakening of language identity, the phenomenon of "township clique" brought about by the distance of language can be gradually eliminated, and the personnel turnover of the enterprise will be more frequent.

Based on the above discussion, in areas where the dialects are more diversified, the managers will adjust the corporate strategy through specific paths such as increasing investment in R&D innovation and market expansion, increasing the degree of business diversification, decentralizing the allocation of assets, and enhancing the mobility of internal personnel. Based on this, this paper proposes the core hypothesis:

Hypothesis 1: Corporate strategy will be more aggressive when located in areas with higher dialect diversity.

3. Methodology

3.1 Data Source and Processing

This paper takes the Chinese A-share listed companies

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from 2006 to 2018 as the research sample, and the required financial data comes from the CSMAR database. Dialect diversity data comes from a dialect database constructed by Xu Xianxiang et al. (2015).Drawing on the existing research, this paper processed the sample as follows: ① remove the companies in financial industries; ② since five years of financial data is needed, companies that have been listed for less than five years is excluded; ③ drop samples with missing data; ④ Tails the continuous variables at the levels of 1% and 99%. After the above screening, this paper finally obtained 16024 "enterprise-year" samples.

3.2 Model Design and Variable Definition

This paper builds a Test Model (1) of Hypothesis 1 as follows:

$$Strategy_i, = \beta_0 + \beta_1 * Dialect\ Diversity + Control_i, + Industry + Year + \varepsilon_i$$

3.2.1 Explained Variables

The discrete variable Strategy serves as the explanatory variable and represents the corporate strategy. Drawing on existing literature (Bentley et al., 2013), this paper measures it from the following six dimensions: ① The ratio of R&D expenses to operating income, reflecting the enterprise's tendency of innovation; ② The ratio of selling and administrative expense to operating income, reflecting the market expansion tendency; ③ The growth rate of operating income, reflecting the growth of the enterprise; ④ The ratio of staff number to operating income, reflecting the enterprise's production efficiency; ⑤ The standard deviation of the number of employees, reflecting the stability of the organizational structure; ⑥ The ratio of fixed assets to total assets, reflecting the capital density. For the above six indicators, this paper first calculates the average of the past five years, and then sorts the indicators by "Industry-Year" from small to large and assigns a score of 1-5. Finally, the scores of the six dimensions are added to obtain a score ranging from 6 to 30 points, which is called strategic aggressiveness. Higher score represents a more aggressive strategy.

3.2.2 Explanatory Variables

DiaDiv and *DiaNum* are the variables for dialect diversity and the main explanatory variables, quoted from Xu Xianxiang et al. (2015) dialect database, which uses prefecture-level administrative divisions as analysis units to measure the diversity of dialects within a city. One is the Dialect Diversity Index (*DiaDiv*), which is a weighted average based on the proportion of the population of a dialect in a city; The second is the number of Chinese sub-dialects used in the city (*DiaNum*).

3.2.3 Controlled Variables

We include controls for the main characteristics of the enterprise, the board of directors and management, the market environment and the level of economic development in the region. The specific settings are shown in Table 1.

Table 1. Definition of main empirical variables

Variable symbols	Variable definitions
Strategy	Scoring of six dimensions. 6-12points: Defender. 13-23 points: Analyzer. 24-30 points: Prospector
DiaDiv	Economically indicates the probability of any two people randomly selected in the city speaking different dialects
DiaNum	The number of Chinese sub-dialects used in a city
Soe	Indicator variable, coded one if the enterprise is state-owned and zero otherwise
Size	Natural logarithm of total assets of the enterprise
Lev	Ratio of total liabilities to total assets
Roe	Ratio of net profit to net assets
FimAge	Years of listing
Top5Hold	Shareholding ratio of top five shareholders
Board	Number of directors
Indep	Proportion of independent directors in total board members
MgAge	Average age of non-independent directors and executives
Market	Take 1 if the registered place of enterprise is in the west China, 2 in the northeast China, 3 in the middle China and 4 in the East China
IndPos	The proportion of the enterprise's operating revenue in the whole industry

3.2.4 Descriptive Statistics of Variables

Table 2 reports descriptive statistics, in which the two indicators of dialect diversity report the sample and the overall national statistics. The average and median of the strategy variable are both near 18.00, which meets the definition of indicator construction; the standard deviation is 4.348, which indicates sufficient variability. The average of *DiaDiv* is 0.222, and the average of *DiaNum* in prefecture-level cities is 1.722, indicating that language differentiation indeed exists in the overall environment of the enterprise. In addition, the dialect diversity of the sample is basically consistent with the national distribution, indicating that the sample selection errors can be basically eliminated.

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Table 2. Summary statistics

VarName	Mean	SD	Min	Median	Max
Score	17.888	4.348	6.000	18.000	30.000
DiaDiv	0.222	0.195	0.001	0.220	0.782
DiaNum	1.722	0.710	1.000	2.000	4.000
DiaDiv(Nationwide)	0.314	0.243	0.000	0.321	0.7822
DiaNum (Nationwide)	1.743	0.804	1.000	2.000	5.000
Soe	0.349	0.477	0.000	0.000	1.000
Size	22.088	1.268	19.746	21.904	26.048
Lev	0.430	0.207	0.049	0.424	0.916
Roe	0.066	0.123	-0.603	0.069	0.362
FimAge	10.675	6.452	1.000	9.000	29.000
Top5hold	52.507	15.117	19.173	52.530	87.661
Board	8.742	1.743	0.000	9.000	18.000
Indep	0.373	0.056	0.000	0.333	0.800
MgAge	47.685	3.732	34.700	47.862	61.000
Market	3.319	1.078	1.000	4.000	4.000
Indpos	0.029	0.066	0.000	0.006	0.424

The impact of dialect diversity on the corporate strategy is shown in Figure 1. The horizontal axis is the number of Chinese sub-dialects, and the vertical axis is the average of all companies' strategic aggressiveness. It can be seen that as the variety of dialects increase, the corporate strategy aggressiveness shows an upward trend. The results in Figure 1 initially confirm that the dialect diversity promotes the corporate strategy to be more radical, in line with the Hypothesis 1.

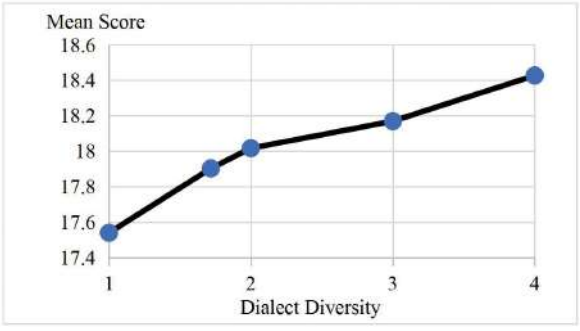

Figure 1. Strategic average score under the diversity of different dialects

4. Empirical Results

4.1 Baseline Tests

Table 3 presents the multivariate results from Test Model (1). The results reveal a significantly positive association between dialect diversity and corporate strategic aggressiveness. One unit increase of the degree of dialect differentiation will lead to an increase of 1.7 units in corporate strategy radicalization, and each increase in the number of regional sub-dialects will increase the degree of corporate strategy radicalization by 0.5 units. Both coefficients meet the significance requirements at a level of 1%, showing that the diversity and complexity of dialects will indeed prompt companies to formulate more aggressive strategies, supporting the Hypothesis of this paper. In addition, the coefficient of *Soe* is negative, indicating that the strategy of state-owned enterprises is more conservative than that of non-state-owned enterprises, which is consistent with previous literature conclusions; the coefficient of *Roe* and the *size* of the enterprise is also significantly positive, which indicates that companies with better performance and larger sizes are more pioneering in decision-making.

Table 3. Dialect diversity and corporate strategy

	(1) Score	(2) Score
DiaDiv	1.708***	
	(3.81)	
DiaNum		0.508***
		(4.30)
Soe	-0.918***	-0.971***
	(-4.49)	(-4.74)
Size	-0.176*	-0.188**
	(-1.93)	(-2.06)
Lev	-2.523***	-2.478***
	(-5.70)	(-5.62)
Roe	2.892***	2.897***
	(6.60)	(6.61)
FimAge	-0.071***	-0.070***
	(-4.20)	(-4.11)
Top5hold	-0.002	-0.003
	(-0.37)	(-0.52)
Board	-0.081	-0.084
	(-1.58)	(-1.62)
Indep	-0.415	-0.298
	(-0.33)	(-0.24)
MgAge	-0.148***	-0.150***
	(-5.80)	(-5.89)
Market	-0.154*	-0.216***
	(-1.87)	(-2.77)
Indpos	-6.496***	-6.602***
	(-4.12)	(-4.10)
_Cons	32.500***	32.518***
	(16.67)	(16.59)
Year	Yes	Yes
Industry	Yes	Yes
N	16024	16024
adj. R2	0.125	0.126
F	7.556	7.557

4.2 Further Analysis

Based on the results above, this section further examines the mechanisms by which the diversity of dialects affects corporate strategy and examines the economic conse-

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quences of the mismatch between the company's strategy and the local dialect diversity.

4.2.1 Mechanism Tests

The influence of the diversity of dialects on corporate strategy is mainly due to the decline of social trust in the region and the increase in the possibility of trade frictions and pressure of the market competition caused by regional dialect diversification, which forces the management to actively explore the market, give up the cost leading strategy and implement diversification strategy. Following this line of reasoning, we posit that social trust and business diversification play as intermediary factors.

In order to study the intermediary effect of social trust, we use the personal level trust data of "China labor-force dynamics survey " conducted by *SUN YAT-SEN University*. Regression results are present in Table 4. The coefficient of *DiaDiv* is significantly negative in Column (2), and the coefficient of *Trust* is significantly negative in Column (3). Compared with Column (1), the coefficient of *DiaDiv* has decreased, indicating a partial mediating effect of social trust.

Table 4. Dialect diversity, social trust and corporate strategy

	(1)	(2)	(3)
	Strategy	Trust	Strategy
DiaDiv	2.397***	-0.133***	2.082***
	(11.63)	(-17.19)	(9.91)
Trust			-2.364***
			(-8.00)
_cons	35.388***	2.944***	42.347***
	(33.23)	(93.31)	(31.00)
Control	Yes	Yes	Yes
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
N	11972	11972	11972
adj. R^2	0.156	0.101	0.160
F	35.200	23.484	36.294

We also use sales income of a company at the regional level to measure its diversification (HFI Index), calculated as $HFI = 1 - \sum_1^n p_i^2$, where N is the number of regions the company operates in, and p_i is the proportion of income belonging to each region to the total operating income. The regression results are shown in Table 5. Dialect diversity is significantly positively correlated with diversification, with diversification significantly positively correlated with strategy aggressiveness, verifying the aforementioned strategic adjustment path.

Table 5. Dialect diversity, Diversification and corporate strategy

	(1)	(2)	(3)
	Strategy	HFI	Strategy
DiaDiv	1.618***	0.076***	1.540***
	(8.57)	(6.59)	(8.16)
HFI			1.038***
			(7.64)
Control	Yes	Yes	Yes
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
N	14263	14263	14263
adj. R^2	0.129	0.051	0.133
F	34.082	12.808	34.512

4.2.2 Economic Consequence of Strategic Mismatch

In order to explore the relationship between the strategic mismatch and the business performance of the enterprise, we use the absolute residual error obtained from the main regression as the explanatory variable and the average return on total asset (ROA) in the next five years as dependent variable to get Table 6.($ROA_{t+1\sim t+5} = \alpha_0 + \alpha_1 \mid \varepsilon_{it} \mid + \mu$). The residual that represents the strategic mismatch is significantly negative, indicating that not adapting to the company's locale will indeed negatively affect the company's long-term performance. The main implication is that managers should get more insight into linguistic environment of the enterprise and adjust the strategy prudently.

Table 6. Economic Consequence of Strategic Mismatch

	(1)	(2)
ROA	*DiaDiv*	DiaNum
Mismatch	-0.035**	-0.034**
	(-2.21)	(-2.11)
Control	Yes	Yes
N	8280	8280
adj. R2	0.188	0.188
F	177.960	177.931

4.2.3 Category Discussion

China 's state-owned enterprises burden "political missions" to support regional employment, so they are more diverse and inclusive when setting and planning strategy than private enterprises. Moreover, state-owned enterprises are much less dependent on external resources and external institutions than private companies, so the impact of dialect diversity on their business expansion will also

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weaken. Therefore, compared with private enterprises, the influence of dialect diversity on state-owned enterprises' strategy might be weakened. In order to testify such assumption, we divide the sample into state-owned and private groups to regress separately. In state-owned group, the coefficient of *DiaNum* and *DiaDiv* appears unrelated to strategy. But in private enterprises, the estimated coefficients are all significantly positive and larger in absolute value, passing the Chi2 test, indicating that the influence of dialect diversity on corporate strategy mainly exists in private enterprises but is relatively limited on state-owned enterprises.

Table 7. Dialect diversity, Controlling Shareholder's Nature and corporate strategy

Score	Private Enterprises		State-owned Enterprises	
	(1)	(2)	(3)	(4)
DiaDiv	2.484***		0.756	
	(4.54)		(1.10)	
DiaNum		0.866***		0.021
		(5.89)		(0.12)
ControlVars	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	10096	10096	5928	5928
adj. R2	0.107	0.114	0.114	0.113
Chi2 Test	22.39***		78.73***	

Notes: Robust t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Furthermore, the impact of dialect diversity is likely to work only within a certain geographical range, and varies with the size of the enterprise. First of all, when the scale of an enterprise continues to expand, the institutionalization of the enterprise will gradually improve. The balance between strategic choice and environmental adaptation is more due to changes in the relationship of interests brought about by strategic changes. Secondly, with the expansion of the organization scale, the implementation of the strategy will become more difficult, and the ability of the language environment to directly influence the corporate strategy will be weaker. In addition, the larger the scale of an enterprise, the more likely it is that the area covered by its operations will exceed the scope of its registration and be distributed nationwide. Then the link between the diversity of dialects in a single region and the corporate strategic development considerations will be weaker. Therefore, we establish a hypothesis that the influence of dialect diversity on corporate strategy becomes weaker as the enterprise scales larger. We include the interaction term *Size* × *DiaDiv* and Table 8 reports the results. The coefficients of the interaction term are significantly negative, in support of our conjecture, providing reassuring evidence that the bigger scale will indeed weaken the influence of dialect culture on corporate strategy.

Table 8. Dialect diversity, corporate scale and corporate strategy

	(1) *DiaDiv*	(2) DiaNum
DiaDiv	1.880***	
	(4.09)	
Size×*DiaDiv*	-0.024**	
	(-2.23)	
DiaNum		0.555***
		(4.64)
size×DiaNum		-0.004***
		(-2.82)
ControlVars	Yes	Yes
Year	Yes	Yes
Industry	Yes	Yes
N	16024	16024
adj. R2	0.127	0.128
F	8.564	8.630

Notes: Robust t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Still further, we divide sample into four groups according to ownership structure (whether CEO is also board chairman) and CEO's familiarity with the regional culture (whether CEO's native place or birthplace is identical to company's register city) to study the moderator effect of managerial features in the relationship between dialect diversity and company's strategy. As shown in Table 9, the coefficient of *DiaNum* and the adjusted R-square increase with the improvement of the manager's board status and the manager's familiarity of the local culture.

Table 9. Dialect diversity, governance features and corporate strategy

Strategy	(1)	(2)	(3)	(4)
	Two-Post Arrangement	Two-Post Arrangement	CEO duality	CEO duality
	Outland CEO	Local CEO	Outland CEO	Local CEO
DiaNum	0.226*	0.583***	0.861***	1.021***
	(1.66)	(2.86)	(2.65)	(2.99)
ControlVars	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	1877	1122	691	546
adj. R^2	0.185	0.253	0.271	0.294

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4.3 Robustness Test

In order to ensure the reliability of the main conclusion, we have conducted robustness tests from the following aspects:

4.3.1Instrumental Variable Regression

In order to overcome possible endogenous problems, we use Chinese terrain gradient index extracted by Feng Zhiming et al. (2007) as a tool variable to re-examine the impact of cultural diversity on the degree of corporate strategy aggressiveness. The formation of culture is usually closely related to the terrain. Generally speaking, the more complicated the terrain and the greater the slope, the more likely this area is divided into different relatively closed small areas in its history, so that the area forms multiple dialects, that is, the dialect diversity of a region is positively related to its terrain slope. However, corporate strategy will not affect the natural condition of terrain, especially in modern society. It can be safely considered that the terrain slope has no direct impact on the corporate strategy.

Table 10 gives the estimated results of 2SLS. Columns (1)-(2) are the regression results of first stage. *Slope* is significantly positively correlated with the two dialect diversity indicators, indicating that the terrain slope can be used as an instrumental variable for dialect diversity. The F statistic of the weak instrument variable test is 13.495 and 194.168 respectively, both of which rejects the existence of the weak instrument variable. Columns (3)-(4) are the second stage regression results. The coefficients on dialect are still statistically significantly positive. Our conclusion is further strengthened by the evidence.

Table 10. Regression results of instrumental variables

Variables	(1)	(2)	(3)	(4)
	DiaDiv	DiaNum	Score	Score
DiaDiv			36.639***	
			(3.09)	
DiaNum				2.536***
				(5.48)
Slope	0.011***	0.156***		
	(3.67)	(13.93)		
ControlVars	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	16024	16024	16024	16024
adj. R2	0.1073	0.1137	0.1142	0.1132

4.3.2 Sensitivity Test

To minimize the concern that our estimates could be plagued by uncaptured factors, we first alternate measurement of strategy by using two dummy variables, where PROS is coded one if strategy score is above 24 and DEFE is coded one if strategy score is below 12. We then include the per capita gross domestic product (PerGDP) and regional gross domestic product (GDP) in a city for the controls of regional economic development. And to exclude the influence of population flow, we remove the sample in Beijing, Shanghai, Guangzhou, Shenzhen and rerun the regression test. Our conclusions remain highly consistent after all above refined tests.

5. Conclusion

In a corporate decision-making process that fully considers the matching of strategy with the external environment, regional culture has an impact on the interactive behavior of corporate organizations, and largely determines the development ideas and strategies of the enterprise. Dialect diversity, as an important part of an enterprise's language environment, has a subtle influence on the enterprise's enthusiasm for R&D, resource acquisition, transaction cost, asset composition, personnel structure, and capital flow, which has significance for the strategy of the enterprise. This paper conducts an empirical analysis to examine the effect of dialect diversity in the enterprise's location on the corporate strategic aggressiveness. We argue that higher dialect diversity in an enterprise's location leads the corporate strategy to be more aggressive and misfit of strategy has negative effect on long-term performance; Moreover, the increase in strategy aggressiveness is due partly to the weakening of social trust as well as an increase of business diversification tendency. To further characterize this effect, we explore that the influence of dialect diversity on strategy is more pronounced as managers' awareness of the dialectal environment increases, but is weaken if the enterprise is a state-owned enterprise or has larger scale. Our results are robust to various controls, alternative measures, and matched samples.

The research in this paper enriches literatures on strategy management and shed light on managing practice, highlighting the importance of understanding the crucial link between the cultural environment and the setting of corporate strategy, which is, firms need to align their strategy to their "dialect condition" and other seemingly irrelevant factors because the fit between strategy and the culture will affect performance positively.

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REVIEW

The UK Non-Frustration Rule: Should it be Replaced with a US-inspired Approach?

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ABSTRACT

Recently, Arm Holdings, the most successful semiconductor and software design company in the UK, has agreed to be sold to SoftBank, a Japanese company. This takeover case, along with the case that Cadbury was acquired by Kraft in 2010, has led to questions about the openness to foreign mergers and acquisitions.[1] The non-frustration rule plays an important role in the openness of the UK's market for corporate control.[2] Therefore, it is time to rethink about the non-frustration rule. One of the most heated questions is whether the rule should be replaced with the US-inspired approach. This article argues that the US-inspired approach will not function as well in the UK as it does in the US. After all, the UK and the US differ a lot in corporate structures and company regulations which make the background of the non-frustration rule different in two countries.

1. Introduction

The non-frustration rule is evaluated as a "keystone rule" in the UK Takeover Code[3] In the UK, the managers of companies are subject to the non-frustration principle, in which without the special power given by the shareholders, the only way allowed to reject a hostile takeover is to search for a third party, the "white knight"[4], to make a better offer.[5]

In 1959, the non-frustration rule was firstly stated in the Notes on Amalgamations of British Businesses[6] Later, in 1968, the first takeover code set forth the rule in depth and it had remained almost the same afterwards. Today, the non-frustration rule is presented in General Principle 3 of the UK Takeover Code as, "the board of an offeree company must act in the interests of the company as a whole and must not deny the holders of securities the opportunity to decide on the merits of the bid."[7] Furthermore, Rules 3 and 21 of Takeover Code also elaborate this rule. It can be found in Rule 3.[8] that, the target board is required to remain silent during the bid. The board is prohibited from making any recommendation for the shareholders on whether to accept the offer or not[9]. The Rule 21 sets down a list of situations to illustrate when the shareholders' approval are required.[10] The situations include share issues, acquisitions, disposal of the company's assets, etc.[11] It was argued by Professor Davies that, this rule does not necessarily prohibit actions which have frustrating effects. It rather emphasizes that these actions

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must be "placed firmly in the hands of shareholders during the general meeting".[12] According to Rule 21 and 34, the non-frustration rule will come into effect when a bid is made or when the company has a reason to believe that an offer might be imminent.[13] As such, corporate actions taken prior to the offer would not be prohibited.

In the UK, the non-frustration rule is highly supported by business persons, scholars and practitioners. J Plender states in his article that, the US approach is toxic when compared to the UK regulations. The UK approach ensures that the market is under control, which is fair for shareholders.[14] Support for this regulation is based on several rationales. Firstly, the non-frustration rule protects shareholder sovereignty. To be specific, shareholders have the right to decide whether to sell their shares or not.[15] Secondly, under this rule, the board of a company has less chance to take action for their own interests. Furthermore, it helps with solving agency cost problems.

Unlike the regulations in the UK, the US takeover law is quite different, especially in the aspect of takeover defense. In most American states, company management has considerable discretion. It is lawful and common for them to take actions when an offer is imminent.[16] It is believed in the US that, although management may be entrenched through takeover defenses, they can bring some positive effects.[17] First, since there are takeover defenses, the board of directors have the right to control the sale process and determine sale strategies. A controlled action is highly likely to result in a better premium.[18] Second, the regulations in the US give company management more time to search for a third party which can provide a higher offer. Third, the actions the management take can prevent some shareholders, especially uninformed ones, from selling their shares at a low price.[19] Last, the defenses may enable the company to obtain a price better than the board's reservation price.[20]

The UK and the US rules share little in common, they have their respective advantages and rationales behind them. When inquiring whether the UK non-frustration rule should be replaced with the US approach, positing a UK legal world without Rule 21 of the Takeover Code is a good choice.[21] Without Rule 21, under the UK company law's mandatory rule, the defensive discretion for the board of directors is constrained.[22]

2. Takeover Defenses in the Absence of the Non-Frustration Rules

In the United States, the state corporate law allow a company to take both generally applicable and company-specific board-controlled defense actions.[23] There are mainly five types of takeover defense in the US. This article outlines the five types and discuss about whether they are available and practical in the UK legal world where there is not any non-frustration prohibition.

The most potent and prevalent defense in the US is the "poison pill". The shareholder rights plan (poison pill) "involves warrants issued by the target company to existing shareholders to purchase equity in the target company (flip-in plan) or in the bidder should a successful bidder merge with the target (flip-over plan)."[24] Until there is a triggering event, the warrants approved by the board do not have any economic value. The triggering event always occurs when a bidder crosses the ownership threshold without the approval of board of director.[25] The law provides the board with the right to redeem the warrants, and the tender offer cannot proceed unless the board does so. The poison pill can be put in place anytime, even after a tender offer has been announced and the shareholder approval is not yet required. However, it is not possible to make a warrant without shareholder approval in the UK under the non-frustration rule.[26] Even if the non-frustration rule is abolished, in order to issue the warrant, a general meeting is still required, because the shareholders have to provide the management with the authorization to allow the warrant in a general meeting.[27] Apart from the problem mentioned above, another problem with regard to the availability of the poison pill in the UK arises from rules of the United Kingdom Listing Authority (UKLA). The principle 5 of the UKLA rules that "for listed companies holders of the same class of shares be treated equally in respect of the rights attaching to such shares."[28] When the shareholder rights plan is allowed, the bidder is unable to purchase the shares at a discount, which may be viewed as discriminatory by the UKLA and under that case the poison pill would not be available to the UK listed companies.

Regardless of the availability that poison pill can be applied to the UK legal system, the effect of this approach will not be as good as it is the US. In the US, the board of directors can be removed without cause and at any time, and it also allows the boards to have staggered three-year term and be removed only for the cause during the term.[29] Besides, whether or not an interim meeting can be called during the terms depends on the company constitution.[30] In contrast, in the UK, the board term is usually one year and shareholders have the right to call interim meeting.[31] All in all, the board in the UK under the shareholder rights plan have far less power when compared with the board in the US.

The second type of defense in the US is business combination defense. When a bidder crosses the threshold

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without the board approval, the business combination defense comes into effect, which limits the bidder's ability to purchase the target company, often through a merger.[32] In the UK, the business combination defense can be applied in three situations. It can be placed at the IPO stage in the corporate constitution. The defense is also available prior to the bid or whenever there is shareholder approval. The business combination defense is used to fight against the unwelcome suitors. However, in the UK, the shareholders have the right to remove the board of directors or suggest the board that the bidder is not an unwelcome one. Thus, this defense would be ineffective in the UK legal world.

The third defense is the restructuring defense. The Delaware state in the US is a good example to illustrate this approach. In Delaware, the board of directors can provide a third party with a substantial block of shares without shareholder approval.[33] Under a certain circumstance, the shareholder approval is required; that is when the company is listed on the New York Stock Exchange while it shares a large number of outstanding voting shares.[34] The Delaware companies have flexibility to make interim dividends.[35] By contrast, UK companies are facing more restrictions. A company can issue shares to a friendly third party only "if the company has sufficient authorized share capital, the shareholders have granted authority to allot the shares[36] and, if the shares are issued for cash consideration, the shareholders have misapplied their statutorily imposed mandatory pre-emption rights."[37]

The fourth approach is business decisions with a defensive impact. This defense may be taken because of both defensive impact and business merits.[38] The "crown jewels" defense is one of this kind of defense, which means that the company may sell its key business asset so that the bidder would have no interest of the company. A listed company should follow the Listing Rules' regulation of Significant Transactions.[39] Shareholder approval is required when a disposal amounts to the sale of 25 per cent of the company's assets,[40] while in Delaware, the amount is "all or substantially all".[41]

The last takeover defense is litigation. In the US, bidders have disclosure obligation which is stated in the Securities and Exchange Act 1934[42]. If the bidder fails to comply with the obligation, the defensive litigation can be used.[43] In addition, target companies can commence antitrust litigation if the takeover will cause antitrust injury. Commencing litigation provides the target board with more time to search for a better bidder. Since the mid-1980s[44], when the poison pill was approved, it has been more common for companies to use the pill to get more time in a bid. While in the US, litigation is not the most powerful defense, in the UK, where other defenses are not available or ineffective, whether litigation (in the absence of non-frustration rule) can be available seems to be a rather important issue. Under the City Code on Takeovers and Mergers, which is the predecessor of the Takeover Code, the scope for litigation is limited, because the code is not law.[45] The Panel plays a role of public law and the decisions carried out by the Panel can be the subject to a judicial review. In the case R v Panel on Take-overs and Mergers[46], the Court of Appeal claimed that, it was for the Panel to decide the bid, the court would not intervene in the Panel's decisions[47] The Company Act 2006 rules that, only the Panel is able to apply for injunctive relief[48] Accordingly, even without Rule 21, the target board has no private right under the UK Company Law and Competition Law. The Scope for litigation is still limited.

3. The Background of the UK And the US Takeover Regulations

So far, it has been argued that, even without Rule 21, the US approach is not suitable for the UK legal system. The reason is mainly based on the divergences between the UK and the US corporate ownership structures and takeover law.

In modern society, there are mainly three kinds of problems that current company law must solve. The first one is the opportunism which may rise between board of directors and shareholders. The other two are relationships between controlling shareholders and minority shareholders along with that between shareholders and other company constituencies, to name a few, creditors, and employees.[49] In order to solve these problems, the company law must work with corporate structures. Since the US corporate structure is traditionally described as dispersed ownership structure,[50] the law focuses on problems of opportunism between shareholders and managers.[51] By contrast, the UK companies are always with concentrated ownership, in the situation of which there always exists one controlling shareholder, thus UK company law concentrates on the problem between controlling shareholders and minority shareholders.[52]

In the United States, the Company Law gives more power to the board of directors, while in the UK, more power is given to the shareholders.[53] Thus, a US board of directors has the discretion when facing a bid. However, as is shown in the Company Act 2006, shareholder approval is required in many situations. In addition, it is the directors' duty not to fight unless the shareholders vote. By contrast, in the US, companies are required to fight against hostile takeovers.[54] There are only two situations, in which the directors can be refrained from fighting:

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(i) the offer is a best one for the company; or (ii) if the *Revlon*[55]'s duties triggers, the directors should sell the company to the highest bidder regardless of other considerations.[56]

Apart from corporate structure, another reason leading to different takeover regulations is that, "UK companies' metaphorical doors are wide open for hostile takeovers".[57] The UK companies are more likely to be purchased by foreign companies rather than domestic ones. This has its advantages and disadvantages. The positive side is that, after taken by a non-domestic company, the domestic British companies become part of a more competitive enterprise, thus protecting jobs in long term. On the other side, it is likely for the company to lose its national identity.[58] It is hard to reach a conclusion whether "wide open door" along with the takeover regulation is generally beneficial or not. However, it can explain to some extent why the US approach is not available and effective in the UK.

4. Conclusion

The non-frustration rule plays a key role in the UK Code. In the 1950s and later, the public concerned about the boards' use of defenses, which might lead to disregard of shareholder rights. Thus, non-frustration rule was created in the Notes on Amalgamations of British Business. The rule balanced the power between the bidder and target board and reinforced the right of shareholder. It also helped in solving agency cost problem.

The defensive actions may produce *ex ante* and *ex post* agency costs.[59] Under the non-frustration rule, the target board is likely to believe that a better performance of the company can help to avoid hostile bidders. On the other hand, if the board of directors has discretion, they will assume that, the vote power would help them retain control even when a hostile bid commences. Accordingly, the takeover threat will lose disciplinary function and the agency cost will occur.[60] In addition, the agency cost will occur when there is divergence of interests between the shareholders and the board. Giving the decision-making right to the shareholders instead of board of directors is a good solution to agency problem.

As mentioned above, abolishing the non-frustration rule and using the US-inspired approach instead cannot provide the board of directors with free rein to take defensive action. Shareholder approval is required to create the defense in most cases and when it comes to using the defense, shareholder approval is required under all circumstances. The non-frustration regulation is a part of the UK company law. The law aims at protecting the right of shareholders, so does the non-frustration rule. Thus, if Company Act does not make adjustments, the change of non-frustration rule is ineffective.

The economic environment in the UK is changing rapidly, however, the non-frustration rule has remained the same for a long time. It is time to rethink about this regulation. There are other possible solutions apart from using US approach. Firstly, increasing the acceptance threshold is a possible way which does not disturb the existed regulations.[61] The second is the disenfranchisement of short-term shareholders. Thirdly, enhancing the Government power, either to obtain enforceable undertakings or block a takeover will also result in a better-ordered market.[62]

Using the US approach is not effective because it offers little defensive power under UK legal system. Although the non-frustration rule does have some side effects, unless a solution which fits in UK legal system has been worked out, it is better to maintain the rules unchanged.

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REVIEW

An Analysis of the Value and Strategies of Microblog Marketing

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ABSTRACT

Microblog marketing is that the enterprise uses the platform of Sina microblog to carry out its own marketing activities. Every fan and even every netizen are potential business participants. With microblog marketing, the enterprise intends to create a good image for the company and products and achieve marketing goals by means of communicating with customers by updating daily content or publishing topics that may be of interest to customers.

1. Introduction

Microblog is a broadcast online social platform that relies on the interaction of users through comments and retransmission for information sharing and real-time communication. Any user can access it through mobile phones, personal computers, and other mobile terminals. In 2009, Sina microblog, a domestic portal, launched a Beta version of Sina microblog, which has since entered the world of mainstream netizens. With the rapid development of microblog and the public revelry, a lot of Internet buzzwords became popular, and had the effect of explosive spread, the network gradually formed the microblog effect.

As a product of the Internet, especially in the current era of dominant mobile phones, microblog has become a new model following portal, search, and other methods, which can obtain and share information anytime and anywhere. The financial report of microblog for the third quarter of 2019 shows that the number of monthly active users of microblog in September 2019 was 497 million, a net increase of approximately 51 million compared with the same period last year. About 94% of the monthly active users are mobile users and created a net revenue of US $ 467.8 million, an increase of 2% from US $ 460.2 million in the same period last year[1].

With the increasing number of active users of microblogand the rising profits of microblog, the marketing team of the enterprise also targeted this "feng shui treasure" and carried out the initial microblog marketing aiming at the functions and forms of microblog. VANCL, the earliest entry into Sina microblog, has attracted nearly 4,000 followers in the first month of its opening on microblog, each of which will attract a lot of new attention. The old netizen must be familiar with such events as "go up microblog, send a scarf" and "did you

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scarf today?": through a series of marketing means such as cooperating with relevant sina users to give the gift of a brand scarf, inviting celebrities such as Yao Chen and Xu Jinglei to interact with users on brand-related products, VANCL has made its enterprise microblog an important platform to promote its enterprise brand, narrow the distance and enhance the emotional bond between the enterprise and consumers. Under the influence of the successful marketing campaign of VANCL, more and more enterprises begin to settle into microblog and carry out microblog marketing activities.

2. Overview of Microblog Marketing

Microblog marketing refers to the behavior that enterprises and individuals use the interaction and communication function of microblog platform to achieve the purpose of commercial marketing by releasing product information and cultural propaganda targeted to the target fan groups. A common way is for companies to attract consumers by releasing new content to spread their values and popular products to users. In addition, we can create social currency to interact with consumers. For example, the main business of the company is selling cosmetics. We can write a short article about soft advertisements such as "do these five steps to make your skin smooth and bright" to achieve the purpose of marketing.

In the era of cultural diversity, microblog marketing integrates and extracts text, pictures, videos, and other materials by virtue of diversified presentation forms of microblog, so that consumers can receive more intuitive and comprehensive information. Such diversified forms of presentation can stimulate potential consumers in multiple ways and achieve better marketing effect of enterprise microblog[2]. Secondly, the transmission of microblog information has increased geometric effect. Enterprises can serve themselves with star effect and social hot topics, or interact with stars on the platform in the form of "@", "forward" and "comment" to improve exposure and share with fans and friends. In addition, microblog marketing is better than the traditional advertising industry. The main body of microblog messages does not have to go through complicated administrative examination and approval, which saves most of the material and financial resources. However, due to its wide coverage of information dissemination, it saves costs for enterprises and establishes a more natural and healthy public communication image. From the process of enterprises' microblog marketing, we can find that microblog marketing can weaken the antagonistic relationship between marketing subjects to a certain extent, so that enterprises can conduct marketing activities with a listening attitude closer to consumers[3].

3. Analysis of the Value of Microblog Marketing

3.1 It Is Conducive to Corporate Brand Communication

Microblog avatar, ID, signature, background wall and content output can intuitively reflect the corporate image and culture. It can strengthen netizens' familiarity and recognition of the brand, shorten the distance with consumers, and build brand loyalty[4]. For example, on the official microblog of Coca-Cola company, its own big red LOGO is used in the profile picture to highlight the brand;the images of the current main spokespersons appear as the background to attract their fans; The content of microblog is mainly interactive andintended toarouse the enthusiasm of fans.

3.2 It Can Help Enterprises to Promote Their Products

The slogan of microblog is "find something new anytime, anywhere". Where there is something new, there will be public attention, and where there is attention, there will be advertising. Therefore, there will be a certain amount of advertising on microblog. It's free to sign up for a corporate account and post videos or text content, but it's a very effective way to increase your brand's exposure. However, enterprises must pay attention to the advertisements when they publish micro blogs. Otherwise, users will lose interest and shift away their attention, which should be a great loss for enterprises, because everyone who follows micro blogs may be potential consumers[5].

3.3 It Makes It Possible for Enterprises to Carry out Integrated Marketing

Enterprises can carry out combined marketing by synchronizing marketing plans of online and offline channels by taking into consideration their specific product selling points or activity contents and designing reasonable channel combination strategies that meet their own needs and highlight their own characteristics.

3.4 It Enables Enterprises to Carry out Public Relations

Microblog's interactivity and openness are very conducive to the daily customer maintenance of enterprises. Enterprises can release and update their daily content every day and conduct continuous interaction with fans. By creating an anthropomorphic image, they can continuously attract fans and increase their loyalty, thus increasing the brand

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loyalty of customers. At the same time, in daily interaction, many customer feedbacks can be collected to facilitate targeted optimization and adjustment.

Not long ago, Kris Wu, a male star who is prone to negative comments from netizens, did a good job in public relations with a microblog to successfully attract passers-by to worship and make such a exclaim that Wu Yifan gave CAI Xukun a valuable lesson in handling public relations. As we all know, in this era of entertainment to death, when stars entertain people, they also are hard to avoid entertainment. Actor Kris Wu not only has been among hot topics for a long time due to one of his freestyle lyrics without high quality, but also caused the netizens' craze for pouring negative comment and poking fun at him. Fortunately, his public relations team has a keen sense for microblog users' entertainment mood. With a microblog to tease Kris Wu and entertain the public, the team successfully reversed the story and won netizens' approval of Kris.

4. Analysis of the Strategies of Microblog Marketing

4.1 Clear Objectives, Full Participation, And Long-Term Operation

Many companies just blindly follow suit and set up microblogs. However, due to the lack of management, unclear goals, no planning and other reasons, they easily give up after a period without finding the effect. Therefore, enterprises must realize that using microblog for marketing is not a random and accidental behavior, it is a systematic engineering.

Successful microblog marketing requires clear objectives, scientific planning, solid marketing activities as the basis, persistence and sustainable post-maintenance. More staff participation can be involved and microblog marketing team should be established. through microblog valuable information should be continually provided and updated in time. Meanwhile, strengthen the interaction with netizens should be strengthened and proceeded so as to gradually improve microblog influence, appeal and accumulate fans, keep fans and convert them to users[6].

4.2 Abundant Information, Innovative Activities, Persistent Attention from Potential Customers

Attracting enough attention from potential consumers is the foundation of successful microblog marketing. Corporate microblogs struggle to get people's attention quickly and gain many fans like celebrities. Therefore, how an enterprise can create a microblog that people like to browse and patronize repeatedly is a very important issue.

China Merchants Bank's approach is worth learning from. China Merchants Bank uses microblog as a consultation platform for financial wealth management and information. As a marketing brand for financial products and services, it publishes 10-12 specific microblog messages in a fixed period through a fixed microblog section every day. Three of them are information about financial management knowledge. In the enterprise microblog, there will be a lot of promotion activities related to business, or online activity information organized around financial products. At the same time, it can also organize and summarize online network resources through microblog live broadcast, fan contact and other flexible ways[7]. In 2010, China Merchants Bank launched a new financial platform "Love Wealth Management". For example, the microblog holds various activities from time to time, such as "seckill", "love him on valentine's day" and "love money". China Merchants Bank turns microblog into not only a window for official news and advertising, but also a platform to provide valuable information to potential consumers.

4.3 Combination with Blog, Complementation with Blog

Microblog itself belongs to the form of blog. Compared with blog, microblog can release information more conveniently and quickly. The information terminal is more diversified, the operation is simpler, the information dissemination is faster and the interaction is stronger. The advantages of microblog make it quickly become a marketing platform valued by enterprises. However, due to the capacity of only 140 characters, the content of microblog is simple, and the information tends to be scattered, and it is difficult to fully express the content and viewpoints to be transmitted.

Relatively speaking, blog does not have text capacity limit and is able to provide system information needed; as a result, it enables the company to supply product information accurately so that customers can have a more comprehensive and in-depth understanding of the company, and the features and functions of products. The in-depth research of blog in a certain field and the communication with users in many aspects also provide an effective way to obtain users' brand recognition and loyalty. Microblog has its own advantages. Microblog can extract the most important part of the blog, provide it to the user, arouse the user's interest, and attach the url of the blog, so that the user can more quickly enter the blog to read the whole article to learn more information. Therefore, blog and mi-

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croblog can complement each other and be combined to improve the effect of microblog marketing[8].

4.4 Cooperation with KOL

KOL refers to a Key Opinion Leader, or an online "activist." They often influence others by providing information, opinions, and comments in interpersonal communication. They can be classified according to the following conditions: whether they have a right to speak in life, whether they add V to their opinions, their fields of opinion (politics, business, entertainment, leisure, etc.) and their different nature (media, government, enterprises, celebrities, general public, etc.). On the Internet, KOL can play a better role than in the traditional environment. Enterprises should pay attention to the influence of microblog KOL, give full play to the appeal of microblog opinion leaders, make more target consumers accept the information that enterprises convey in an active and positive way, and improve the effectiveness of microblog marketing[9].

5. Implications and Suggestions of Microblog Marketing

5.1 Enhance the Publicity of Corporate Image

In the specific microblog marketing process, the first thing to establish a good image is to win the goodwill of microblog users towards enterprises. Take Durex for example. Durex's microblog can be roughly divided into the following categories: hot topics, holiday wishes, celebrity entertainment, knowledge popularization and so on. If it is close to the people's livelihood, any item can be transformed into a humorous and unique copy. Durex's microblog is mainly used for brand image and promotion, linked to its service platform and e-commerce platforms such as Tmall and Jingdong Mall. Its microblog content attaches great importance to originality, which helps to set up an excellent brand image. According to its own product characteristics, Durex builds its official microblog into a well-cultivated, humorous, and skillful joke master, with a relaxed and funny way to spread popular knowledge. Associating its microblog content with hot spots and transforming them into their own copies, Durex makes sure that its microblog meets internet users' need for high-quality content, and adapts well to the changes of the current era, displaying its high sensitivity to the change in marketing methods. In addition, Durex's official microblog is frequently updated and interactive, which is the most important reason for its wide recognition by the public.

5.2 Play the Star Effect and Improve the Forwarding Rate

With the rapid development of microblog, stars and web celebrities will be more willing and more inclined to interact with fans on microblog. Naturally, more enterprises choose to cooperate with these high-traffic stars who's been enjoying popularity on microblog over five years to advertise for themselves.

These "microblog celebrities" evaluate the enterprise brand through one or two microblog comments, which can have a great impact on the image value and product value of the enterprise, and the marketing effect is remarkable. Such a new marketing method that creates value for businesses through well-known microblog platforms and famous microblog characters are referred to as star effect.

Hu Ge, a male star well reputed for his wonderful image and temperament, recently has been endorsing the phone——Huawei Glory series. In the product release of the Glory series, Hu Ge presented himself at the release and as a result, the venue was full of people, many whom went there for Hu Ge and bought the mobile phone because he is the endorser. On another occasion, Hu Ge met his fans in a mall, who then eagerly asked for his autograph; but Hu Ge agreed to give autograph only to those who use the mobile phone series endorsed by him. This is the power of stars; star effect is incredible.

5.3 Win Approval from KOL And Create Attraction

KOL is regarded as a relatively new marketing tool, which has exerted the advantages of social media in terms of coverage and influence, and has a strong fan loyalty. The top KOL is composed of celebrities from all walks of life, and its marketing is mainly realized through endorsement, promotion for events and so on. The vertical KOL mainly refers to "we media" with many fans and professional influence, and its marketability forms are relatively flexible and diverse. The last type of KOL refers to professional experts and active brand fans, who are between ordinary people and big V, have a certain communication power and amount to a large number, and can communicate with consumers on an equal basis.

In order to make the enterprise information stand out from the thousands of micro blog messages, we must make every effort to win the approval of the industry opinion leaders, and attract the attention of fans with the influence of such leaders. Leaders whose opinions are influential are regarded as the industry monitors. In some industries, the attitude and evaluation of these industry opinion leaders are particularly important for such indus-

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tries as food, beauty makeup, parenthood, tourism, etc. Enterprises should guide industry opinion leaders to give active and positive evaluation of enterprises, and then quickly spread the favorable news among potential customer groups to improve their popularity.

5.4 Pay Constant Attention to Current Hot Topics and Seize the Opportunity

Microblog is a huge information base. If enterprises pay more attention to the hot economic news, they can get inspiration and find business opportunities. Durex, for example, has achieved great success with its creative copywriting. But this success is no accident. Durex analyzes the hot topics every day, extracts the most critical content, and then makes a smart connection with its own products or brand culture. Turn the product pitch into a copywriting format that is more acceptable to users. None of Durex's posts are straightforward. His posts are like a brain teaser that requires us to ponder and speculate. In this way, the fans interact with each other, and the fans who are interested in the interaction will share the topic with other friends. At the same time, this also stimulates the curiosity of netizens and attracts them to the copies that follow, thus increasing user viscosity.

5.5 Handle properly Negative Information and Make Backup Plans for Crisis in Public Relations

Due to the influence and dissemination power of microblog, more and more enterprises have their own official microblog. Through microblog platform, they can carry out a series of activities such as new product promotion, corporate image maintenance, and interaction with consumers, to better serve enterprises. Microblog is like a double-edged sword, with both advantages and disadvantages. Its viral-like marketing uses the internet users' interpersonal network and enthusiasm for participation to spread information like a virus, thus bringing benefits to enterprises more quickly. However, there are always two sides to everything, so enterprises should be careful in the use of microblog, when the crisis occurs, skillfully use microblog to resolve the crisis.

Compared with traditional public relations, microblog ACTS like a megaphone, spreading and amplifying the exposed information and escalating the influence of the event step by step once a message is exposed.

In 2012, at CCTV's "March 15" gala problems with McDonald's chain restaurant in Sanlitun, Beijing and Carrefour's illegal operation were revealed. According to statistics, 80% of microblog users support McDonald's, while Carrefour has been attacked by netizens, Similar problems with food, different treatment. The reason is that McDonald's handled the crisis properly. After the problem was exposed, McDonald's apologized on its microblog within one hour. It responded quickly and made an immediate response.

Why did consumers give McDonald's their support? This is due to McDonald's great ability to deal with public relations with its microblog.

Because McDonald's often USES microblog to subtly influence consumers, so as to spread product advantages, brand concepts, corporate image, such as the launch of environmental products, playing the family card to cause nostalgia, constantly emphasize the quality of a series of promotional activities, consumers have a sense of trust in McDonald's. After the "March 15" party, McDonald's decisively turned to microblog, issued an apology statement, and after the outbreak of the crisis, McDonald's is the first enterprise to close businessfor inspection by the Ministry of Industry and Commerce. Such a series of actions showed the effectiveness of McDonald's microblog public relations and its prompt response to the crisis. This is the charm of good microblog public relations.

Therefore, enterprises should always pay attention to every microblog message, do a good job in predicting the development of events, and establish an information early warning mechanism. React to the negative information immediately, form the plan and take measures. When explaining negative news on microblog, be honest. The explanation posted on microblog must be rational and objective so that fans can understand and accept it. Otherwise, the fans' blind misbelief and dissemination of negative information will be aggravated , which will bring irreparable losses to the corporate reputation.

6. Conclusion

The emergence of microblog has indeed made a great contribution to the development of enterprise marketing. Its development enables enterprises and their products to come in close contact with users, bringing more attention and even potential customers to enterprises. However, every coin has two sides. Only by using microblog marketing correctly can an enterprise better achieve its marketing goals and truly create value for the enterprise. With the development of science and technology and the progress of economy, the Internet has become an indispensable part of our life, and microblog marketing has also become an important weapon for enterprise in marketing. If an enterprise attaches importance to the planning and promotion on microblog and optimizes its marketing plan, it can pave the way to success for each enterprise.

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REVIEW

Training and Development Strategies for Senior and Middle Level Managers with the Purpose of Learning Organizations

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ABSTRACT

In the presence of dynamic organizational environment and a growing supply of 'knowledgeable employees' which require more professional managers to address their fast changing and increasing needs, senior and middle level managers are now required to keep up with the dynamic and learning environment more than ever. In order to train senior and middle level managers, the article has recommended four perspectives to encourage the development of learning manager. The first aspect for senior and middle level mangers is to integrate learning talents into their practices. The second point is to encourage managers to provide strong support for individuals and teams to develop a learning organization. The third point encourages learning managers and organizations to be composed into the culture of the organization. The last point advocates for more open and free dissemination of information and knowledge to be allowed within an organization.

1. Introduction

Learning organization is a conspicuously new organization model. In today's era of turbulent organizational environment, the traditional organizational structure has been replaced by the flattened organizational structure of learning organization for the sake of its multi-level, pyramidal design (Luhn, 2016)[1]. The traditional theory of human resource management implies that the traditional organizational structure model is the basis (Wen, 2014)[2]. Therefore, it is urgently required that people adopt a new human resources management theory to support this new form of organization. With the advent of the era of knowledge-based economy, the number, and the proportion of "knowledgeable" employees in organizations have been growing. And especially their senior and middle level managers are the most important resources for maintaining the survival and development of an organization. It is required that incentives for knowledgeable senior and middle level managers shift their focus to the spirit of motivation that meets the higher-level needs of social, self-esteem and self-actualizing needs. Peter M. Senge (1994)[3] pointed out that the employees' attitudes toward life are just as artists' devotion to art works if they can continually fulfil their innermost desire to achieve their dreams. They are constantly creating and surpassing themselves, which is a truly lifelong learning experience. Learning is a higher level of needs, and can make the employee's social needs, self-esteem, self-fulfilment and other spiritual needs to be met. Based on the

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above background, the author will be in the role of the company's director of human resources and make specific recommendations on how the training for senior and middle level managers of a company makes them become learning managers. The author believes that the training of learning managers is inseparable from the construction of the learning organization, because the training of senior and middle level managers is closely related to the learning organization.

2. Learning and Training Strategies for Senior and Middle Level Managers

The advent of globalization and networking has forced enterprises to make a series of innovations in order to adapt to the new situation. How to make the senior and middle level managers to become learning talents will be an important part of the new management revolution. It is noteworthy that some forerunners of managing innovation have accumulated a great deal of experience in this area. Their practice shows that to be a learning organization, the enterprise must ensure that the learning behaviours of individuals and teams are integrated into a systematic track and that learning behaviours are effectively translated into creative actions. Most of the successful transformations of learning organizations mainly focus on three aspects, which mean the leadership and management, the organizational culture, and the communication and knowledge systems (Armstrong&Foley, 2003)[4]. From the perspective of the human resources component, the author will make recommendations to train senior and middle level managers so that they may become learning managers.

3. Leadership and Management

In a learning organization, it is required that leaders and managers at all levels provide strong support to the individuals and teams engaged in learning through the following five aspects: (1) Standardizing the learning behaviour. (2) Establishing a system to promote learning. (3) Encouraging employees to make innovative suggestions. (4) Ensuring the smooth dissemination of knowledge and learning channels. (5) Enterprise resources are inclined to the people and teams engaged in learning (Bhaskar& Mishra,2017)[5]. For example, almost every employee of Harley Davidson knows Richer and Teerlink , the CEOs, place special emphasis on learning. Richer not only invested heavily in creating Harley University, turning the corporate university into a training camp for Harley Davidson, and almost all of his speeches can be found on the discussion of learning. As early as 1980, when Bob Galvin, the former CEO of Motorola, found the poor profitability of the company, the first remedy he had thought of was to invest 11 million dollars to set up a training and education centre of Motorola. Since then, the learning and growth of the employees especially senior and middle level managers have become part of the core business of Motorola.

For another example, the process that from thrive to decay and then from decay to thrive of the IOI (Intermedics Orthopedics Inc.) strongly explain the importance of leadership and management involvement in learning. Just as the business of IOI flourished, about half of managers suddenly resigned and wanted to start their own business, making IOI face the danger of falling apart (Parding& Abrahamsson, 2010)[6]. The CEOs, Jerry and Mallory, put forward a revitalization plan, and the core content was to transform the company into a learning organization. The company's leadership developed the learning rules that regulated the learning behaviours from top to bottom. Mallory and those managers who stayed to struggle conceded that they did not know the answers to all the questions, but they were willing to work hard to learn how to answer those questions. During the learning process, the managers of IOI redefined their core competencies and developed a system to assess employee skills and personal development. In the IOI, managers encourage employees to make suggestions and comments. They often solicit opinions from front-line employees and give timely feedback on the opinions and suggestions of employees. In the meantime, the managers of IOI pay special attention to the connection and cooperation of knowledge dissemination and learning. In their opinion, on the one hand, the solution of some problems requires the joint efforts of different departments; on the other hand, the successful practices of some departments can also be used for reference by other departments. Therefore, in learning organizations, cooperation and exchange are very important aspects. When those departments and individuals who are good at innovation and learning see their learning achievements shared by all the members of the organization, their enthusiasm for learning is greatly enhanced, and the enthusiasm of the departments and individuals that lagged behind is also mobilized.

4. Energetically Instilling in Senior and Middle Level Managers the Organizational Culture

Culture is the glue of the organization (Huang& Shih, 2011)[7]. The culture of a learning organization should be: supporting and rewarding learning and innovation; promoting the exploration, the learning, the adventure, and

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the experimentation; allowing mistakes and seeing mistakes as opportunities for learning. At Harley Davidson, "keeping the smart curiosity" is one of the company's five core values. The company encourages employees, especially senior and middle level managers, to question current practices, advocating for them to actively seek ways to improve. After 15 years of steady growth in analogue device company, the company's five-year plan failed for the first time in the mid-1980s. Although analogue device companies still hold the leading position in the linear integrated circuit market and still have the best designers and technologists in the industry, the CEOs Ray and Staad have become keenly aware of the company's management problem. After some thought, Staad took part in a training titled "The New Management Model" moderated by management expert Peter M. Senge. After the training, Staad had started to introduce a corporate culture that helps to organize learning. Clever Staad hoped that while introducing a new organizational culture, they would also be able to solve the management problems that had hindered the development of the company. He set up 15 analytical groups on products, markets, technology, etc., asking team members to work with new values of openness and innovation, and their job was to ask questions and find answers. After months of work, the team finally concluded that the fragmented organizational structure and the division of departments of the simulated company were the biggest chronic illness in their management. It is intriguing that in the last 20 years, nobody of the simulated company has come up with these questions.

5. Attaching Importance to Communication and Knowledge System

The lifeline of a learning organization is a free and open system that facilitates information exchange and knowledge dissemination (Armstrong&Foley, 2003)4. Such an exchange system must meet the following conditions: (1) Being able to generate new and useful knowledge; (2) Being able to guarantee the smooth flow of business and strategic information within the enterprise; (3) The enterprise can obtain the relevant knowledge conveniently and quickly from the outside; (4) The dissemination of information is efficient, that is, it can reach the employees and departments who need it at any time; (5) Each information point supports each other and promotes each other. In Corning, there is a training course for senior and middle level managers called "Technical Knowledge" (Filstad& Gottschalk, 2011)[8]. The purpose of this training is to enable Corning's technical experts to understand the latest developments in related technologies in different fields and to broaden their vision. After "charging", the technical experts learned the rich nutrition in different professional fields and inspired the great inspiration for the development of products and technologies, leading Corning to achieve great progress of product design, production technology and production efficiency under the circumstance that the number of frontline workers had dropped dramatically.

Learning from the outside world is equally important for the training the leaning ability of senior and middle level managers. Every year, the General Electric Company appoints a group of senior and middle level managers to visit and communicate with the companies that growing well. The sole purpose of these managers to be expatriated is to share the secrets of those companies' success. After the employees return to the company, they write down the successful tips of the companies interviewed and submit them to the company for rewriting them into teaching materials, which would be discussed, exchanged, and communicated at the executive meeting by leaders at all levels of General Electric Company. And they will learn from the business ideas and management methods used by General Electric Company.

In FedEx, the communications, the information, and the knowledge management system are mutually supportive and mutually reinforcing (Kesiena& Olivier, 2014)[9]. The performance management technology subsystem of FedEx can monitor the entire process of any package from the application to the destination. And the service quality performance information subsystem regularly publishes a comprehensive customer feedback form to grassroots employees so they understand how to improve their work to meet the customer requirements. In addition, the company also has an employee feedback information subsystem, and staff at all levels can discuss their opinions on the evaluation of the leadership at higher levels and the problems that the enterprise still has. It is because of such an interlocking and mutually-overseeing information system that FedEx and its employees have made significant strides in organizational learning and personal development.

For enterprises, learning from the experience of learning organization is very important to train the learning ability of senior and middle level managers. In addition, Peter M. Senge (1990)[10] also provided a set of ways to establish a learning organization in his book "The Fifth Discipline". Peter M. Senge believed that the establishment of learning organizations must be based on five skills training, that is, five practices. Only when these five exercises are carried out often, can the organization grow into a learning organization. These five practices are the

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self-transcendence, the improvement of mental models, the establishment of a common vision, the group learning and the systematic thinking. In the author's opinion, to become a learning organization, enterprises should focus on the following ways considering their own characteristics: (1) To transform itself into a learning organization, the enterprise must start with establishing an organizational structure suitable for learning. Learning organizations are information-based and knowledge-based organizations with far less management than traditional structures. For example, when a multinational firm restructures its organization in accordance with the communication of information, it found that 7 of the 12 management levels could be eliminated. These excluded levels are not the right level, the decision-making level or the supervision level, but only the transfer stations of information. Emphasize the "flattening" of organizational structure and minimizing the internal management level of the enterprise as far as possible can make the organization more suitable for learning and building ground breaking thinking. Besides, the project management, the teamwork, the interface management, the concurrent engineering and so on can all be able to contribute to the systematic learning of the organization. (2) After having a certain foundation of organizational structure, enterprises should also focus on shaping the organizational learning culture and cultivating the learning habits, atmosphere of the organization. It is necessary to carry out regular study to the senior and middle level managers in the company to improve the overall learning enthusiasm of the enterprise.

6. Conclusion

In an economic environment where uncertainty is the only determinant, the source of a firm to obtain competitive advantages is undoubtedly the knowledge. The key to the learning training to senior and middle level managers is to be able to create knowledge, spread knowledge and apply knowledge. From the perspective of knowledge creation, the key lies in formulating a knowledge perspective and knowledge strategy. The knowledge perspective requires that employees, especially senior and middle level managers must go beyond their original knowledge and modes of thinking. The essence of the knowledge strategy is to improve the organization's ability to acquire, create, accumulate, and develop knowledge, and the knowledge perspective and the knowledge strategy are harmonized. Dissemination of knowledge focuses on building a network system to connect knowledge among the knowledge teams. Under the guidance of knowledge perspective and strategy, enterprises apply the knowledge they learned to products and services in order to enhance customer satisfaction, gaining the competitive advantages and sustainable development. This article gives a detailed proposal of four points on the training of senior and middle level managers so that they all become learning managers. Besides, the article hopes that the relevant suggestions can provide a little reference to the transformation of the learning organization in the company.

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REVIEW

A Cross-Border E-Commerce Intellectual Property Rights

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ABSTRACT

As an intangible property right, intellectual property is a very important economic resource, which is of great significance for merchants to enter the international market. With the development of The Times, more and more merchants begin to look globally and enter the overseas market. In order to gain a foothold and develop in the international market where intellectual property rights are more strictly protected, intellectual property rights have important significance that cannot be ignored by all businesses. **Writing significance:** Taking NetEase Koala as an example to further understand the IPR protection of cross-border e-commerce

1. Overview of IPR Protection for Cross-Border E-Commerce

1.1 Overview of Current Cross-Border E-Commerce Development

Under the open Internet network environment, e-commerce, as a new way of transaction, brings production enterprises, circulation enterprises, consumers and the government into a new world of network economy and digital survival.

E-commerce refers to the realization of electronic trade activities.

Generally speaking, compared with traditional trade, e-commerce has the following four characteristics: world wide, directness, convenience, equality and so on.

In the face of international competition, e-commerce has created new market opportunities for us on many levels.

Affected by the domestic and foreign trade environment, the development speed of China's traditional foreign trade has slowed down significantly, while cross-border e-commerce has maintained a high level of growth.

According to the 2017-2022 research report on the development prospects and development strategies of China's cross-border e-commerce industry, this can be seen from the data of the ministry of commerce: in 2011, the total transaction volume of China's cross-border e-commerce reached 1.6 trillion yuan, an increase of more than 30% compared with 2010.

In 2012, the total transaction volume increased further and reached 2 trillion yuan. Although the growth rate

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slowed down, it also reached 25%.

In terms of business entities, the number of foreign trade enterprises using various platforms to conduct cross-border e-commerce business in China has exceeded 200,000, and the number of e-commerce platform enterprises has exceeded 5,000.

With the growth trend in recent years, small and medium-sized enterprises and individual businesses account for most of the newly added e-commerce operators, more than 90%. Cross-border e-commerce shows its huge development potential and is expected to become the main force driving the development of China's foreign trade in the future.

The reasons are mainly analyzed in the following three aspects:

(1) the development of Internet, electronic payment, smart mobile and other technologies provide technical support for cross-border e-commerce;

(2) under the influence of international economic downturn, European and American debt crisis and diversified demand, foreign trade orders gradually show a trend of "short, small and fast". The "fragmentation of foreign trade" drives the development of many domestic small, medium and micro foreign trade enterprises, and cross-border e-commerce has become a convenient channel for them to develop overseas markets

(3) with the rapid development of domestic economy, Chinese people pay more and more attention to the quality of life. The huge middle class consumer group has a strong demand for overseas luxuries, high-quality food and agricultural products.

China's cross-border e-commerce transactions will reach 6.5 trillion yuan in 2016, with an average annual growth rate of nearly 30 percent, according to an estimate by the ministry of commerce.

In the market pattern, B2B of foreign trade plays a dominant role in China's cross-border e-commerce, and most B2B enterprises have large trade orders with surprising overall scale.

Although only part of the import and export trade of these B2B enterprises is completed online, online trading has not been completely realized, but with the continuous improvement of online trading in technology and management services, complete online trading is just around the corner.

Cross-border online retail in China has been growing rapidly in recent years. There are two major types of retail models. First, e-commerce enterprises have established independent foreign trade B2C websites to conduct sales activities, such as lanting jixu and Vipshop.

The other is that e-commerce enterprises carry out trade through third-party platforms, such as eBay and amazon.

In terms of product composition, China's foreign trade enterprises mainly export products such as clothing, small household appliances and digital products, with a larger overall scale and faster growth rate.

The characteristics of cross-border online retail that serves individuals determine its characteristics of small amount, multiple batches and high frequency transactions.

In recent years, China's cross-border e-commerce is developing rapidly and has made remarkable achievements. However, there are still some restrictive factors in customs clearance and supervision, which have caused serious impact on the development of cross-border e-commerce.

2.2 At Present, the Protection of E-Commerce Intellectual Property Rights

Current situation of legislation in the field of electronic commerce:

With the rapid development of e-commerce, in recent years, the infringement of intellectual property rights in the field of e-commerce has been increasing, and the means of infringement has become more and more diverse.

How to better strengthen the means of judicial and administrative protection of intellectual property and solve the outstanding contradiction of intellectual property protection in the field of e-commerce has become an urgent problem to be solved at present and even in the future.

Therefore, in 2012, zhejiang intellectual property office started from investigating the current situation of e-commerce intellectual property protection, and put forward countermeasures and Suggestions on further improving the laws and regulations of e-commerce intellectual property protection, strengthening supervision and rights protection, and building a disciplinary system.

The rapid development of e-commerce has led to the increasingly prominent problem of intellectual property protection.

In recent years, the state, relevant departments and enterprises have taken various measures at the legislative, judicial, administrative and operational levels to solve the problems of intellectual property rights in the development of e-commerce.

At present, the main laws in the field of e-commerce include copyright law, tort liability law (promulgated in 2009), and the decision on strengthening network information protection enacted by the National People's Congress in 2012.

In terms of administrative regulations, the interim provisions on the management of international networking of computer information networks, regulations on the protec-

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tion of computer software, regulations on the protection of the right to spread information networks, etc.

The theoretical circle has different views on the nature and status of network trading platform in e-commerce. They regard platform platform as "seller or joint venture", "rough site or counter lessor", "intermediary", "network service provider" and so on.

According to the judicial interpretation of the supreme people's court in 2012, Internet trading platform providers are only Internet service providers (or independent third parties), not intermediaries.

E-commerce puts forward higher requirements for intellectual property protection:

Without a sound intellectual property protection environment, it is impossible to promote the sustainable development of e-commerce industry.

First, e-commerce has become a hotspot for intellectual property disputes. E-commerce USES knowledge, information, technology and other means to create social material wealth, inevitably involving many intellectual property disputes.

Second, e-commerce model has gradually become an object of patent protection. In 1996, the patent examination procedure manual M.P.E.P issued by the United States patent and trademark office explicitly allowed the application of patents for business methods.

Third, e-commerce challenges the traditional mode of intellectual property protection. It is mainly manifested in the conflict between the infinite space and time of e-commerce activities and the limited protection of traditional intellectual property rights (time, region and space).

Intellectual property rights in e-commerce are more hidden than traditional intellectual property rights. It is more difficult to define administrative and judicial jurisdiction difficult.

E-commerce platform operators have encountered a large number of intellectual property rights complaints disputes.

According to statistics, Alibaba handled 910,000 IPR infringement complaints in 2011 and 400,000 in the first half of 2012.

On taobao, 8.7 million IPR infringement complaints were handled in 2011 and 2.35 million in the first half of 2012.

The two e-commerce platforms have increased their investment in intellectual property protection, and the number of complaints has been decreasing

From the content of intellectual property complaints, intellectual property disputes on Alibaba's platform mainly focus on patents and trademarks;

The intellectual property disputes on taobao mainly focus on trademarks and Copyrights.

It can be seen that different e-commerce platforms face different intellectual property disputes.

3. Netease Koala Related Introduction

3.1 Company Development

NetEase Koala is a comprehensive e-commerce company mainly engaged in cross-border business under netease. It was publicly tested on January 9, 2015, and its sales categories cover maternal and infant products, beauty and makeup, home life, nutrition and health care, global cuisine, clothing bags, digital appliances, etc.

NetEase Koala with 100% genuine, every day low price, 30 days worry free return, fast delivery, provide consumers with a large number of overseas commodity purchase channels, hoping to help users "with less money to live a better life", boost the consumption and life of the double upgrade.

NetEase Koala concept, main proprietary straight length in the United States, Germany, Italy, Japan, Korea, Australia, Hong Kong, Taiwan has branches or offices, in-depth product origin direct mining height are broken quality, suitable for the Chinese market of goods, from the source to eliminate fake goods, guarantee the quality of the goods at the same time save a lot of the intermediate links, directly from the country of origin arrived home, under the monitoring of the customs HeGuoJian, stored in a bonded warehouse.

In addition, NetEase Koala also jointly developed the qr code traceability system with the customs to strictly control product quality.

Hangzhou as "cross-border electricity in test area, the first batch of pilot enterprises", NetEase Koalas in the ways of business model, marketing, integrity, self-discipline, has achieved a lot, from the China quality certification center certification of "class B2C commodity e-commerce transaction service certification", certification, four star level is the first domestic to receive the certification of cross-border electricity company, also is the present domestic first for one of the highest level of certification of cross-border electronic business platform.

As a media-driven e-commerce company, NetEase Koala is a strategic product created by netease group with a large amount of high-quality resources. It has solved the current situation of information inequality between merchants and consumers, and has seven advantages, including self-operation mode, pricing advantage, global distribution, warehousing, overseas logistics, capital and num-type service.

In June 2018, netease kaola.com announced to change

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its name to "netease kaola.com", announcing its entry into the comprehensive e-commerce market.

Shopping trolley

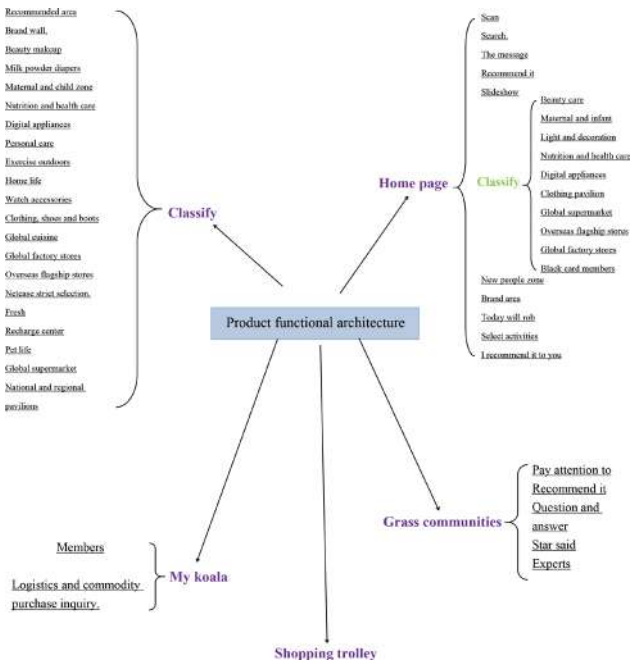

Figure 1. NetEase Koala whole process development analysis chart

Any product has its own positioning, and netease kaola has the following positioning:

Product positioning: self-run cross-border e-commerce, providing low-price and fidelity overseas purchase services for daily necessities.

User orientation: urban white-collar women, new workplace mothers.

3.2 Netease Koala Intellectual Property Rights Protection

In recent years, China's cross-border e-commerce industry has developed rapidly. In addition to meeting the basic needs of consumers, intellectual property rights have also become an important weight in the competition of cross-border e-commerce platforms in terms of protecting authentic products.

As the largest cross-border e-commerce platform in China, netease kaola.com actively conducts in-depth cooperation with the government to protect intellectual property rights.

On December 15, 2017, netease kaola.com signed a memorandum of cooperation on intellectual property with hangzhou customs, further promoting the protection of intellectual property rights in cross-border e-commerce.

The two sides said they will cooperate on ipr risk prevention of cross-border e-commerce enterprises, customs enforcement assistance, cross-departmental coordination and education and training.

As a leading cross-border e-commerce platform in China, NetEase Koala insists on practicing the protection of international brand intellectual property rights from the source of the supply chain to provide consumers with genuine products.

NetEase Koala's insistence on genuine products has also been widely recognized by the market.

On February 6, 2018, the world's leading new economy industry data mining and analysis iiMediaResearch authority (media) has released the latest research on cross-border electricity dealer market in 2017, according to the report, NetEase Koala sea to buy authentic trust leads to 38.8% the cross-border electric business platform, with a 25.8% market share in the first place, this is since 2016, NetEase Koala sea purchase authentic credibility first for two consecutive years, the market share first.

Hangzhou customs, as the director of the first comprehensive pilot zone of cross-border e-commerce in China, has been paying close attention to the issue of intellectual property in cross-border e-commerce. This cooperation with netease kaola overseas shopping will not only help the e-commerce platform to establish the awareness of intellectual property protection, but also make consumers more confident about product quality.

Besides signed the memorandum of cooperation, the hangzhou customs will also work with NetEase Koala sea in cooperation between research and propaganda and training, etc, the two sides will jointly form the protection of intellectual property rights research team, through the cross-border electricity or the issues of intellectual property rights research and discussion, enhance the ability to work both intellectual property protection.

As early as the beginning of 2017, NetEase Koala overseas shopping has tried to cooperate with government agencies to achieve autonomy.

On March 8, netease kaola overseas shopping and the national monitoring center of cross-border e-commerce commodity quality and safety risk signed a memorandum of cooperation on joint governance of cross-border e-commerce product quality. The two sides will conduct joint governance in information sharing, data sharing, joint governance of quality, collaborative disposal and other aspects.

The two sides will establish a regular cross-border commodity quality supervision and sampling inspection cooperation mechanism, jointly discuss the formulation of

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cross-border commodity self-inspection and control plan, and implement sampling inspection, feedback and disposal according to their respective functions.

After the cooperation between the two parties, consumers can watch the whole process of direct purchase and quality inspection through the relevant pages of Netease Kaola overseas shopping, making the inspection submission visible and transparent for the first time.

The move not only strengthens consumers' confidence in strict and scientific law enforcement by the national monitoring center, but also strengthens consumers' confidence in the cross-border e-commerce industry and market.

Cooperation memorandum signed in cross-border electricity product quality work after the national monitoring center for the first time according to the purchase and sales of infant formula in NetEase Koala sea, love for ranking among his beauty, kraal, Hero, a2, beautiful, beautiful Baby son, Craig Bellamy, mead Johnson, semper nine brands such as a total of 46, conducted a random transport work.

Zhang lilong, deputy director of e-commerce department of hangzhou entry-exit inspection and quarantine bureau, announced the inspection results of dozens of products at a joint conference on the quality of cross-border commodities held in May. The data showed that all the products tested were qualified in physical, chemical and microbial indicators.

For the results of the inspection, NetEase Koala overseas shopping said no surprise.

As a cross-border e-commerce platform that insists on self-operation mode, direct purchase of genuine products and protection of brand intellectual property rights, NetEase koala has always put the quality of goods in the first place.

All inspection from 100% insist on warehousing and other industries the most strict quality standards to the well-known SGS inspection and quarantine organ, Zhejiang inspection and quarantine institute of science and technology cooperation such as sampling observation, and then to "twelve Yan Zhengpin guarantee written pledge to fulfill a military order" in the history, NetEase Koala sea for effective quality supervision of the society from all walks of life recognition, perfect quality inspection system for cross-border electricity industry has set a standard model better.

This time, NetEase koala overseas shopping and government agencies will further promote the recognition and protection of intellectual property rights in cross-border e-commerce industry.

4. Case Study

NetEase Koalas have been taken to court by Estée lauder's agents in China.

We learned from Chongqing no. 1 intermediate people's court that Estée lauder's trademark infringement case against NetEase Koala and NetEase has been formally filed in the court and will be held soon.

Intellectual property experts and analysts in the cross-border e-commerce industry believe that at present, the problem of trademark right and parallel import of overseas online shopping involving the secondary sales of overseas commodities is a common dilemma faced by the cross-border e-commerce industry.

"During the review of the case by the first intermediate people's court of Chongqing, the supreme people's court approved the establishment of the people's court of Chongqing Liangjiang new area and the people's court of Chongqing pilot free trade zone, and made adjustments to the jurisdiction of the basic courts under the jurisdiction of the court in respect of intellectual property cases," the civil ruling said.

This case belongs to the case with significant influence in this jurisdiction, so this case should not be continued by Chongqing Yubei District people's court.

The first intermediate people's court of Chongqing municipality shall propose the case for trial.

According to the Chongqing municipal first intermediate people's court on January 15, 2019 to make the information in the civil verdict: the plaintiff Estée lauder (Shanghai) v. NetEase Koalas and NetEase the infringement trademark rights, Estée lauder (Shanghai) the main demands of the four:

First, NetEase Koala and NetEase to immediately stop the implementation of the infringement of the plaintiff no. 834258 "m. a. C" trademark rights behavior, including but not limited to stop sales of products involved in trademark infringement, the disclosure of the infringing products or source of supply chain;

Second, NetEase Koala and NetEase immediately destroy infringing products;

Third, NetEase Koala and netease have published apology statements on People's Daily online, ifeng.com, qq.com, sina.com, caixin and other websites for 30 consecutive days, in order to eliminate the adverse effect caused to the plaintiff due to the infringement of the right to exclusive use of registered trademarks.

Fourth, NetEase Koala and netease jointly and severally indemnify the plaintiff for the economic loss of RMB 1 million caused by the infringement of the right to exclusive use of a registered trademark, as well as the reason-

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able expenses incurred by the plaintiff for investigating and stopping the infringement of RMB 200,000.

Legal part: A trademark is a markshangAs a kind of identification mark in industrial activities, the role of trademark right is mainly to maintain the order in industrial activities, which is different from the role of patent right to promote the development of industry.

Trademark right has five characteristics: exclusiveness, timeliness, locality, property and category.

In this case, NetEase Koala torts Estée lauder's MAC trademark right mainly because NetEase Koala damages its exclusive trademark right.The main reason for cross-border e-commerce infringement is the relative lag in the legislation of trademark right of ziyu. In terms of the protection of cross-border e-commerce trademark right, there is a gap, which cannot catch up with the rapid development of cross-border e-commerce.

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REVIEW

On Some Legal Problems in Postal Administration

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ABSTRACT

With the development of e-commerce, the express delivery industry in China has developed rapidly. In the past, the express logistics service with postal service as the core has gradually developed into a competitive situation among many logistics companies, such as EMS, Shunfeng, and "Four Tong & One Da"(Shentong Express, Yuantong Express, Zhongtong Express, Best Express, Yunda Express). With the rapid development of China's express industry, and the development of e-commerce, the number of online shopping has increased, express has become an important choice for small goods exchanges. As a new industry in China, express service industry greatly promotes the development of social economy. With the rapid development of express industry, China has surpassed the United States and become the largest express country in the world. The proportion of express industry in GDP has exceeded 1%, which is becoming one of the pillar industries in China. At the same time, the development of the industry is not standardized. Due to the difference of service standards and the lack of service quality, the number of consumer complaints is increasing.

1. Introduction

From the case of disputes between consumers and express companies, it is mainly about the damage and loss of express mail. From the perspective of legislation and practice, there are still deficiencies in the provisions on the damage and loss of express mail. The main problem in judicial practice is that people's courts around the country have different understandings on the nature of the compensation liability for damage and loss of express mail, which is easy to lead to cases. There are differences in the treatment results. Therefore, through the analysis of the liability for damages caused by the damage and loss of express mail, the paper introduces the problems discussed by case analysis, expounds the nature of the liability for damages caused by the damage and loss of express mail, analyzes the problem of liability concurrence, summarizes the main problems existing in the liability for damages caused by the damage and loss of express mail, and puts forward specific countermeasures for the express delivery industry in China Standardized development provides useful reference. With the development and prosperity of express delivery industry, the after-sales service problems of damages represented by express damage and loss emerge in endlessly. This paper attempts to analyze and discuss the performance, causes and corresponding countermeasures of express damage and loss compensation.

At present, from the perspective of practice, the compensation for the loss and damage of express mail mainly focuses on two aspects.

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2. No or Less Compensation

2.1 No Compensation

Express delivery companies often refuse to compensate for lost or damaged express delivery for various reasons. Common reasons include: force majeure, undeliverable express delivery, over claim period, illegal delivery of goods, etc.

The most typical is the exemption of force majeure. This is the most commonly used excuse for express delivery company to not compensate for the loss or damage of express delivery. Force majeure was originally the exemption clause used when the earthquake, flood, war and a few extreme situations that could not be controlled by express delivery company occurred. But in reality, some express companies expand it arbitrarily, for example, the spontaneous combustion of express vehicles will destroy packages, the vehicles (mainly tricycles) will be seized by traffic police, the vehicles will fall into the water, stolen and so on. Especially in recent years, with the restriction and prohibition of electric tricycle driving on the road in Shenzhen and other large cities, it can be said that it has become a "killer" for the development of express enterprises. Why is there such a huge relationship between the prohibition of express three rounds and the compensation for damage and loss of express? The main reason is that express three rounds has become the most important means of transportation in the last kilometer of delivery from warehouse to customers. In fact, this problem has only appeared in recent years. We know that in the traditional express delivery, the main responsibility for the last kilometer is the car and bicycle. The car has a large volume and regular operation. It is the preferred delivery tool for traditional postal express enterprises, but its disadvantages are also very prominent: the cost is high, and the car is suitable for long-distance and large-scale transportation between provinces and cities. The range of transportation, but because in the last kilometer of distribution, customers are often very scattered, many for residential areas, vehicle parking has become a headache. In particular, fuel burning, stop and go, and the cost of distribution is very high, so at present, in addition to EMS and a few multinational giants in the end of the distribution of cars as a means of transport, other express companies have rarely used.

And bicycles. Most of us should still remember the jingle of a postman's green postal bicycle as a child. Bicycles are small in size, flexible and convenient, and there is no problem of high cost and parking difficulty. They are the first choice for the end distribution of traditional postal express delivery. However, because of their slow speed, they have disappeared in recent years. Instead of two-wheel electric vehicles, electric bicycles are convenient to Park, cheap and fast, and once became the first choice of transportation tools for express delivery enterprises. It also has a fatal disadvantage: less cargo, especially in recent years, with the rise of online shopping, the number of express mails that each courier needs to deliver has doubled, and the timeliness requires that it is impossible to get a large number of repeated back and forth, so the limitations of e-bikes are clear.

As a result, the electric tricycle is "the whole field of powder and ink". It not only retains the advantages of low cost and convenient parking of bicycles and e-bikes, but also makes up for its short board with small cargo capacity. Once it was born, it won the favor of almost all couriers and became popular in the north and the south. But then the problem came. Is the invert of electric tricycles a motor vehicle or a non-motor vehicle? If it belongs to a motor vehicle, it needs to be licensed, which is a good thing for managers and can regulate management, but for couriers and express companies, it has increased their use costs substantially, and lost their comparative advantages with cars, which is not feasible in reality; if it is classified as a non-motor vehicle, it is convenient for couriers and express companies, but the electric tricycle is fast and heavy traffic accidents are easy to occur due to large volume, so the traffic management department cannot allow it. In addition, the ugly shape of electric tricycles, which stop at random, has seriously affected the city appearance and appearance, so first Shenzhen, then Shanghai, and then other large cities have followed, all of which are forbidden to use electric tricycles on the road. This has led to many express tricycles being seized by traffic police. After the traffic management department seized these express tricycles, it did not treat them as a special delivery vehicle, but treated the express on the tricycle as ordinary goods at will, and the couriers and express enterprises would rather not use the tricycle than pay a high penalty, so in reality, there is a lot of problems. More express, because tricycle was seized and caused by the loss of damage. Therefore, the compensation disputes caused by three rounds of express delivery should be highly valued and studied.

2.2 Less Compensation

There are two main situations of the problem of less compensation.

2.2.1 Noninsured Express

Express enterprises adopt standard terms, and indicate on the back of the waybill that noninsured express shall

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compensate according to three or five times of the express tariff, which leads to the serious imbalance between the value of express and the compensation cost.For example, if we send a document, education background or file, it may be worth a few cents or a few Yuan if we only look at the paper value, but its actual value may be as high as hundreds of thousands, or even difficult to measure with money figures. This is a contradiction. When there is a dispute, express companies often use consumers to protect the price for low compensation, which leads to contradiction.

2.2.2 The Amount of Compensation

The amount of compensation for insured express and uninsured express shall be based on the format contract or the relevant provisions of the postal law. If the consumers are dumb, the express enterprises will say, "who told you not to insure?" So, let's guarantee the price of our valuables so that we can have a good rest? Facts are often not as good as you think. It can be said that the compensation disputes caused by the insured express are not less than those caused by the noninsured express. The most important problem is the inconsistency between the declared value and the actual value of the insured object, which brings about the problem of the upper limit of the amount of compensation. For example, if a consumer wants to send an advanced drawing computer worth 30000 Yuan and buys the insured price, the result is damaged. The express company only pays 10000 Yuan. Why?30000 Yuan is what your consumers say, without proof and evidence. I think after depreciation, it's only worth 11000 Yuan. What about 1000 Yuan? Sorry, the insurance price you bought is 1% of the rate, and the maximum compensation limit is 10000 Yuan. This is a common dispute in the damage and loss of insured express.

3. Compensation for Delay

Compensation for delay also includes two aspects:

3.1 Express Delay

The express delivery was delivered safely and well, but it was a month late. At present, most express companies do not compensate for this. A typical phenomenon is that during the "11.11" period, all shopping platforms have taken a great effort to promote, so that on November 11 and the following days and weeks, the express volume surged, even to the extent that the express enterprises bear the whole park, there was a so-called "warehouse explosion". Every time we arrive at the double-eleven, we can see the express packages piled up in the news media. The warehouse can't be piled up, and they all pile up on the road. The couriers don't have time to deliver them in turn. The consumers have to come by themselves and look for their express in the "garbage mountain".

3.2 Delay in the Claim for Compensation

After the loss and damage of the express, it is often difficult to get the claim in the first time, and it often takes a while. On the one hand, it is due to the negative response of express companies to claims settlement. On the other hand, it is due to the "7-day" buffer period stipulated by the postal administration department: if there is a dispute between consumers and express companies about compensation for loss or damage of express mail, they should negotiate with express companies first. If they can't be resolved, they can appeal to the postal administration department 7 days later. That is to say, consumers are in trouble. After that, even if the express company has explicitly refused to make compensation, consumers can not immediately "complain" to the postal administration department, and can only "complain" seven days later. This regulation, invisibly makes the express company have the foundation of delaying compensation.

The author thinks that there are three main reasons for the confusion of the loss, damage and compensation of express as mentioned above.

4. Savage Growth of Express Enterprises

The history of express industry in China is not long. The earliest express delivery, EMS, began to appear after 1980s.As for the private express like Shunfeng and "four connections and one arrival", which we are familiar with, it was officially recognized and developed rapidly in this century. Before that, the private express was in a state of illegal for a long time, which violated the legal position of "postal monopoly", so it was called "black express", which was banned and attacked by the state. The most typical one is Shunfeng express, the logo of the enterprise. Vehicles and people clothes are all black. Now few people know that their original meaning is to laugh at themselves——"black express".

Due to the long-term "underground" state, the growth of express industry and enterprises has the serious problems of congenital defect and acquired deformity.

The so-called "inborn defect" is that the development of this industry is spontaneous, from the bottom up, and from the day of birth, it has been labeled as "illegal". Therefore, no matter from personnel, site to vehicles and communication tools, it is necessary to be simple and make do with it. The older postal administration law

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enforcement personnel jokingly said that the express delivery enterprise at that time was "123", that is, one telephone, two broken electric vehicles, and three people called one express enterprise. They started to work. The venue was rented to the basement or underground garage of the residential area, and the personnel were some old or idle social personnel. There was no business management or staff training at all. They all played one game. Under the influence of this atmosphere, no one from the boss to the ordinary employees treats and develops the express industry as a new and rising industry, but as a profit-making tool. It is in a gray area where no one cares about it. There is neither top-level design nor capital support. At the initial stage, there are hidden dangers of "irregularity".

The so-called "postnatal deformity" refers to a wave of barbaric and disorderly development after the separation of postal services in 2006, especially after the promulgation of the new postal law in 2009, which legalized express delivery enterprises. When it comes to disordered development, we have to first understand the two business models of express companies.

First, direct operation. In addition to the traditional EMS, large private and foreign-funded enterprises such as Shunfeng, DHL and FedEx adopt this business model. The feature of this mode is that from top to bottom, from total to sub, from personnel to equipment, they are unified, that is, there is only one business entity, no matter how many outlets there are below, they are also built by the headquarters themselves. Each branch and outlet is not an independent legal entity, but a branch of the headquarters. The advantages of this mode are: relatively regular, unified and clear personnel, clothing, vehicles, venue and logo, clear responsibilities, smooth government orders, relatively standardized management, and relatively efficient handling of express loss and damage compensation. The disadvantages are: high cost, especially in the initial stage of the enterprise, a large amount of financial support is needed, personnel should be recruited by themselves, clothing, vehicles, venues, etc. also need to be purchased by the headquarters, with high management cost.

Second, franchising. This is also the vast majority of private express delivery, such as Shentong, Zhongtong, Yuantong, Yunda, etc., all adopt this mode. The characteristics of this mode are: each express delivery outlet pays the franchise fee to the headquarters to obtain the operation qualification; the personnel, vehicles and sites are raised by each franchise outlet, and the headquarters is only for guidance; the business income obtained is paid to the headquarters in a certain proportion; each franchise outlet has an independent legal personality, and can choose to withdraw according to its own wishes; in the management, the headquarters is more guidance than command and so on. The biggest advantage of this model is that the cost is low, especially in the start-up stage of an enterprise, which can bring great development with a small investment.As the resources such as personnel, vehicles and equipment need to be raised by the franchise outlets themselves, it can be said that the capital pressure of headquarters development has been greatly reduced, the management cost is low, and the income of the franchise outlets is divided into several parts, which means more work, more work, less gain, and no need to work, so as to maximize the enthusiasm of the franchise outlets and create greater profits.

The disadvantages of this model are also obvious: irregular, or even chaotic. Each franchise network is an independent small company, with a variety of personnel, clothing, vehicles, venues and logos. For the illegal operation of each franchise outlet, the headquarters has no substantive means of restriction except for withholding the money. The government order is not smooth, the management is disordered, the interests rush in, the problems are prevarication, the loss and damage of express mail is a common problem of enterprises in this mode, which is also very difficult to deal with. In addition, each franchise outlet can exit freely, there is often a phenomenon of running away, which increases the management cost and restricts the enterprise to become bigger and stronger.

At present, due to the vigorous promotion of the management department and the renewal of the enterprise management concept, many powerful private express. enterprises have begun to explore the self-built and self-operated outlets on the basis of the franchise system, which can also be said to be the emergence of a new hybrid system mode of the combination of direct and franchise, which is also the only way for private express enterprises to move towards normalization and standardization.

However, compared with the franchise system, the express enterprises under the direct system can only be called "relative" norms, while the non-standard is the common fault and normal of the express industry. As long as you walk into the operation room of any express outlet, even EMS and some foreign-funded enterprises, disorderly express, wearing all kinds of clothes, dark places, and randomly parked battery cars, it difficult for people to connect all these with the word "standard". Although the postal administration department is unwilling to admit it, but a cruel reality is that express enterprises are not because of the express industry. On the contrary, it is stagnation or even retrogression. Take EMS, the big brother of express industry, for example. More than ten years ago, the distribution vehicles running on the street were all

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postal special vehicles, and the operation workshop was a mechanized, assembly line sorting site. Now, the distribution vehicles running on the street are electric three-wheel and two-wheel, and the operation workshop is a sorting site dominated by manpower. EMS is still like this, let alone other private express delivery, many of which are family workshop business models. It is very difficult to find a foothold after entering.

Why hasn't the great development and prosperity of express industry brought upgrading transformation to express enterprises? The reasons are very complex. There are reasons for the imperfection of laws, the lack of top-level design, and the low quality of personnel. But one of the important reasons can't be ignored is that bad money drives out good money. Specifically speaking, the competition in the express industry is very fierce, and the profit space is so large, so in order to survive, all express companies have to desperately compress the cost space. Those who can use three rounds will not use four rounds, and those who can use manpower will not use machinery. In a word, how to save money and how to come is also a main reason for EMS backward standardization. There is also a distinctive feature of express industry, that is, only focusing on results, not on process. For example, consumers only pay attention to whether express delivery can be delivered to them accurately, cheaply and in time. As for whether they use trains, cars or tricycles in the middle, they don't care about this, as long as you are quick. In this way, the cost of standardized enterprises is bound to be high. In the long run, they will be eliminated by the market, so we can only think of ways to reduce costs and save expenses. In this way, the price of express delivery is cheap, and consumers seem to get benefits. But in fact, irregular operation will inevitably lead to the loss and damage risk of express delivery in the middle operation link, and this part of risk cost will ultimately be transferred to consumers.

In addition to the problems caused by the nonstandard business model, the over dependence on e-commerce also intensifies the abnormal development of "acquired abnormal type".

The express industry has been growing slowly and explosively for a long time, or after the emergence of online shopping e-commerce platforms such as Taobao. Before the rise of online shopping e-commerce platforms, express mainly played a role of postal supplement between individuals and enterprises The scale and volume are relatively fixed, but the export of e-commerce and online shopping. Now, it has greatly changed the positioning and role of express delivery, making it a necessary part of network consumption, which greatly promotes the development of express delivery industry.

5. Supervision Dislocation of Express Industry

There are no rules, no circles. One of the important reasons for the loss, damage and compensation of express delivery is that the industry supervision has been "misplaced" in the face of the chaos of express delivery industry. The reason why it is said to be "misplaced" rather than "absent" is that its regulatory function has always been, and has been in progress, so it is not "absent". When it comes to industry supervision, everyone is familiar with it. Each industry has its own regulatory department. For example, when it comes to self-employed household supervision, it naturally thinks of the industrial and commercial bureau; when it comes to drug factory supervision, it naturally thinks of the food and drug administration; when it comes to banking supervision, it naturally thinks of the banking regulatory bureau; but when it comes to express supervision, there are not many people who can be exact.

In fact, since the day the express industry was born in China, there have been corresponding regulatory departments - the Ministry of Posts and telecommunications and local posts and Telecommunications Administration. Since the 1970s, under the leadership of the Ministry of Posts and telecommunications at that time, the local posts and Telecommunications Administrations began to perform the industry supervision function. But at that time, the regulatory function was relatively single, that is, to crack down on and ban non post express, that is, "black express". In 1998, the Ministry of Posts and telecommunications was abolished, and the post and telecommunications administration were dissolved accordingly. Its related express supervision functions were replaced by the State Post Office and local post offices. During this period, the express delivery supervision, because the postal sector is still in a strong position, is still to maintain the exclusive postal business, but only in the express goods on the opening, acquiescence in its existence.

The real supervision of express industry began in 2006.In this year, with the separation of government and enterprise, the State Post Office will no longer assume the operation function and become a pure government department, and provincial post administrations will also be established to be responsible for the industry supervision within the jurisdiction of the province. In 2009, the new postal law was promulgated, which clarified the legal status of private express after obtaining express business license, and the supervision of express industry was on the right track.

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Originally, with the promulgation of the new postal law, especially the establishment of the prefecture (city) level postal administration in 2012, people had high expectations for the normalization and standardization of the express industry, but in fact, with the passage of time, people are surprised to find that there is a phenomenon of regulatory inversion in the express industry, that is, the enterprise is the "father", and the regulatory department-The door is the "son". There are many regulatory powers written on paper by the express regulatory authorities, which are very perfect. But in reality, they can't be implemented either. Instead, they have to embrace the "thigh" of large-scale express enterprises and become the logistics support department of express enterprises. For example, the tricycle of express delivery enterprises is detained by traffic police. When a phone call comes, the postal administration will immediately call out to coordinate the traffic police release; when the tax revenue is increased, the postal administration will go to the tax department for coordination, so that the express delivery enterprises will pay less taxes; during the double 11, the express delivery enterprises are out of warehouse, and the express cannot be sent out, the postal administration will coordinate the EMS shunting to complete the delivery;And so on and so on.

What more incredible is that in front of many postal administrations, in addition to the signs of this bureau, there are also signs of local express associations.Although the original intention and intention of the postal administration department is good, in order to highlight the purpose of better service for express delivery enterprises, but the common people can't understand these, it is easy to mistakenly think that the postal administration and express delivery association are one unit, two brands, seriously weakening the authority of the regulatory department.

Why does express produce the problem of loss and damage? But there are problems in violent sorting, internal theft, improper transportation and other links. In the final analysis, the operation is not standardized, or there is a standard, but only hung on the wall, not implemented. It also "express delivery". It almost impossible to lose or damage the confidential communication. It the relationship between files that are delivered. If lost, it will cause incalculable loss. Therefore, there is a set of strict operation specifications and they are implemented carefully. If not implemented, they will be severely punished, so no one dares to violate them. For many years, the loss and damage rate of confidential communication is close to zero.

The dislocation of express industry supervision, in addition to the helpless of the postal administration department, which has to focus on the express enterprises in order to have a place for its own breakthrough, also has many areas to improve in the daily supervision and law enforcement. For example, law enforcement officers do not have law enforcement signs and clothing, law enforcement vehicles do not have signs. They wear colorful clothes and enter the inspection of express delivery enterprises. First of all, the formality is three points lower. They are not formal as industry regulators, let alone the following regulatory objects?

There are also names of postal regulatory agencies, which are also confusing. For example, Beijing Tianzhu post administration, is the word "Tianzhu" the ancient Indian name or the abbreviation of which districts? It's easy for the masses to see jokes. The malposition of the industry supervision of the postal administration department is also manifested in the deliberate demarcation line with the postal companies. After the separation of the postal government and enterprises, the postal enterprises all over the country still retain the name of the "post office" on the

grass-roots outlets at the district and county level. This is not only a historical evolution, but also a conventional name of the old hundred surnames. There is no need to change it deliberately. Moreover, most of the express delivery enterprises. Yu post office and post office are still in awe. This is a glorious history. Deliberately erasing this history and firmly drawing a clear line with the old post office will not help to enhance the management authority, but will make the supervised feel contempt after they understand the truth inside. Oh, there is no relationship between the post office and the post office. It just a piece of money. Express Service Association. In this way, further damage to the prestige of the postal administration, so that express enterprises in the non-standard operation of more unbridled damage to the interests of consumers.

6. It Is Difficult to Implement Laws, Relevant Regulations, Regulations and Industry Self-Discipline Standards

At present, on the legal level alone, the provisions on compensation for loss of express mail have been more detailed, not lack of legal provisions, but lack of implementation. For example, a good way to avoid disputes over the damage of express mail is to sign in for inspection. In practice, there are many problems.

After receiving the online shopping package, would you like to sign for it first or check it first? I'm afraid this is a headache that many people have encountered. According to the common sense, it is necessary to look ahead and sign for it. Is the express in good condition after long

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distance transportation? Is it enough? We all want to check and accept first, and then sign for confirmation after confirming that it is complete and correct. But in practice, it very difficult. Because couriers usually don't allow consumers to do this. First, they waste time and earn a cent less if they send a piece less. Second, they are afraid that consumers won't want it after unpacking, so they will bear the loss. In this regard, the shopping website has given tips. If the courier refuses your request for open package inspection, then you do not sign it, so the courier will generally agree with the consumer requirements after weighing.

Laws and regulations are difficult to implement. On the other hand, it is due to the lack of top-level design. The postal administration department is weak and has the heart to implement but is unable to implement. Some other powerful departments have the power to implement but have no heart to find trouble for themselves. Therefore, in the protection of consumers'; rights and interests related to express compensation, we should not play ball and shirk responsibility, otherwise it is difficult to solve the current problems.

In addition, the problem of express after-sales, especially the problem of compensation for loss and damage, is frequent, easy to issue and hard to solve. In addition to the above responsibilities of the government and enterprises, the lack of relevant theoretical research is also an important reason. In a reasonable way, the express industry in China has been produced for more than 30 years and developed for more than 10 years, but there are only a few papers on relevant research, even if there are, it has no practical value to discuss the liability of compensation for loss in the legal system before the promulgation of the new postal law. In Colleges and universities, there is no counterpart specialty to cultivate talents in this field. Some people may ask that communication management and logistics management have been established for a long time? In fact, the communication management is postal communication, and the logistics management is logistics industry. Although they are closely related to express delivery, they are not express delivery majors. With the rapid development of express industry, in addition to after-sales problems such as express claim settlement, many urgent problems need to be solved in the development of express enterprises, such as terminal delivery, intelligent express box, express qualification certification, communication and transportation optimization, tax system reform and so on. The reality is that colleges and universities generally equate express delivery industry with low-end industry, which does not belong to the opening of related majors or courses. Such as the famous "four post": North post, South Post, Chongqing post and West post, and the colleges closely related to postal management, let alone other colleges and universities.

In view of the above problems, the author believes that to solve the problem of compensation for the loss and damage of express mail, we must work together to solve both the symptoms and the root causes.

Let start with the treatment of the symptoms: First of all, we should improve the compensation mechanism of express. According to the relevant provisions of the postal law and the express delivery implementation regulations, the loss and damage of general express delivery is compensated according to three or five times of the express delivery fee, which is obviously a drop in the bucket for valuables and cannot be accepted by consumers. In practice, then, it should be solved by the measure of insuring price. Insuring price is a layer of insurance for the goods in express, which is equivalent to buying a transportation insurance. It is the most direct solution to the problem of compensation for loss and damage of express. As mentioned before, in practice, it is often easy to have the problem of difficult claim settlement or too little amount of claim settlement, or force majeure of express enterprises as an excuse to refuse compensation, or set a compensation ceiling, such as 10000 Yuan. No matter how much the excess part is, it will not be compensated. That is to say, consumers spend more money on the price protection, but actually do not enjoy the corresponding services. To solve this problem, we must strictly limit the scope of force majeure exemption. For example, traffic police check, fire, flooding and so on, the courier is overloaded, does not comply with the traffic laws and regulations, fails to fulfill the duty of guard, neglects his duty and other human factors. We must resolutely clear out the scope of force majeure exemption, which is an obvious overlord clause and has no binding force.

At present, the determination of the actual value of express articles is the focus and difficulty of the insurance issue and dispute. Many of the articles carried by express enterprises are not brand-new or clearly marked, or have original invoices. This is often controversial in the determination of the actual value of express articles. In order to get more compensation in case of an accident, consumers may put the articles. The value goes up, while express delivery companies try their best to reduce the value of goods in order to lose less money. In this way, there will often be different words, and finally when the real danger, there will be disputes. The author believes that the identification of the actual value of the subject matter insured can draw on and refer to some advanced experience of international aviation logistics, that is, the higher the de-

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clared value of the subject matter insured is, the higher the premium that needs to be paid by consumers, and the higher the compensation that consumers get when they are in danger. For example, if the declared value of the subject matter is less than 10000 Yuan, the insurance fee will be charged at 1%; if the declared value is 10000 Yuan to 100000 Yuan, the insurance fee will be charged at 2%, and so on. The advantage of doing this is that if the consumer falsely reports the value, he will pay more for the insurance premium accordingly. If the express company reduces the quotation, it will earn less for the insurance premium. In this way, it will avoid the complicated identification of the actual value of the subject matter, achieve the balance of interests of both sides, and the declared value of the article will converge to the actual value. No one will suffer losses. The author believes that this is a feasible and operable improvement plan for the current situation of the one size fits all of the express price and insurance rate.

Secondly, the insurance market should break the interest hedge. At present, there is another problem in the insured express. After the loss and damage of the express, the express company will push all the claims to the insurance company. As for the other losses of the customers, they will not pay any compensation. This is obviously unreasonable. To solve this problem, it is better to completely open up this part of the insured insurance market and hand it over to the market to solve it. As we all know, the competition in the domestic insurance market is very fierce, and it is impossible to be unmoved for the big cake of Express insurance price, but for various reasons, the insurance market is still relatively closed, closure leads to relative monopoly, which seriously hinders the sound development of the insurance market. Relevant departments should strengthen the top-level design, show courage and wisdom, and thoroughly carry out market-oriented reform of the insurance price. Public bidding can be carried out and unified procurement by the government; express delivery associations can also be organized, but it must be joined by a third party to avoid monopoly of interests. For the insurance companies that win the bid, it is also necessary to establish an exit mechanism, to be able to go up and down, to ensure that they are independent of the interests of the insured express companies and to ensure that the interests of consumers are maximized. If necessary, the CIRC and the people Bank of China may be invited to participate in the formulation of relevant rules, and professional matters shall be handed over to professionals.

Finally, the issue of compensation for mental damage should keep pace with the times. Let's take a look at a case first: Liu worked in Shenzhen for many years. Before 2008, the company had to settle some employees. Therefore, Liu family took Liu household registration file out of the archives department and sent it to Shenzhen Personnel Bureau by air express. However, the file was damaged in the process of transportation, causing Liu to miss the opportunity of settling down, so they filed a lawsuit in the court. In the court, both sides of the prosecution and the defense had a heated debate about whether to calculate the compensation for mental damage and the compensation related to the loss and damage of express delivery.

In the trial, the prosecution and the defense mainly debated whether the applicable postal law or the contract law and the civil law. Here is a point to emphasize that the traditional academic circles have different opinions on whether to apply postal law or other laws such as civil law, contract law, aviation law to the compensation for the loss and damage of express mail. In fact, since the promulgation of the new postal law in 2009, it has been clear that all express enterprises, including non-postal private enterprises and foreign-funded enterprises, are subject to the postal law. In other words, as long as it express delivery, it all under the jurisdiction of postal law, no matter air, water, land, private or foreign, without exception. As this paper discusses the compensation for the loss and damage of express mail, it is obvious that it should all be included in the discussion of postal law.

Back to the case. In the court trial, the prosecution claims to apply civil law and contract law, while the defense claims to apply postal law. Both sides of the prosecution and the defense consider that if applicable postal law is used, the compensation can only be made according to three times of the postage, which is obviously beneficial to the defense, but seriously detrimental to the prosecution.

Is it true? Obviously not. Even in accordance with the old postal law, the act of airmail delivery of Liu household registration files mentioned in this case seriously violates the legal provisions of the postal law that official documents and archives should be exclusively operated by post, and its legal consequence may be the direct ban of business qualification. When the air express company realizes this serious consequence, it will no longer dispute the problem of paying more and paying less. Instead, it should quickly obtain the understanding of customers with money compensation to avoid the fate of bankruptcy.

Unfortunately, due to the particularity or indifference of the postal law, it is very difficult for ordinary lawyers to conduct in-depth study on its provisions and lose the opportunity to strive for a larger amount of compensation for the plaintiff.

And the root cause: The problem of compensation for

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the loss and damage of express delivery is fundamentally whether the operation and after-sales service of express delivery enterprises are standardized. It is impossible for the disordered express industry to solve the problem of frequent loss and damage of express mail. If the problem of frequent loss and damage of express mail is not solved, the problem of liability for damages will always be at the forefront of the wave, and it is difficult to find a comprehensive solution.

First, improve and perfect the "12305" complaint mechanism. In essence, the problem of express damage and loss is also a problem of after-sales service, so it should be the meaning of the problem to unblock the complaint handling channel. At present, the main problem of express service complaint hotline "12305" is still the "7-day waiting period". That is to say, "12305" is not a complaint hotline, but consumers can only appeal to the postal administration department if they fail to reach an agreement with the express delivery company on the relevant compensation liability within 7 days. This virtually increases the time cost of consumers, which is inconsistent with the original purpose of the hotline.

The low awareness of "12305" is also a real problem. Most consumers know the "12315" complaint hotline, while "12315" does not accept express service complaints. "12305" is a complaint hotline specially set up by the postal administration to deal with express service disputes. Due to the shortage of personnel in the postal administration, the Department is in a weak position, so even if there is a good desire to help consumers deal with express service disputes, sometimes there is more than enough. With the explosive growth of the express industry, the disputes on compensation for loss and damage have increased sharply, and this kind of contradiction is becoming more and more serious.

Therefore, relevant departments need to strengthen the top-level design. Either to provide more resources and human resources for the postal administration department to improve its weak position relative to the express enterprises, or to share the pressure of the postal administration department with other powerful departments, such as industry and commerce, quality supervision, public security, transportation, in order to better safeguard the interests of express consumers.

This contradiction can be alleviated by the help of "12345" hotline or "12315" to expand the scope of accepting complaints. In reality, there is an interesting phenomenon. When postal administration personnel come to express companies to deal with complaints from relevant consumers, express companies always greet each other with cold faces, ignore them, or even speak ill of each other. When industrial and commercial departments, tax departments, public security departments and other departments come to inspect express companies, the boss will greet each other with a smile, be respectful, and listen attentively, not because of the power of enterprises, however, the industrial and commercial departments hold the power of life and death of express delivery enterprises. If an enterprise fails to fulfill or timely rectify any requirement, it will be severely punished. Therefore, it is necessary to strengthen the linkage and information sharing among law enforcement departments, and bring the enterprises that often have after-sales compensation problems into the blacklist of local dishonest enterprises, so that they can be considered as a strategy in terms of loans, bids, financing, etc.

7. Promote the Standardization of Terminal Delivery Vehicles

The reason why we need to send the end delivery vehicle, that is, the electric tricycle, is because it is so important! People who know the express industry know that the three rounds of express delivery can be called the lifeblood of the courier and the guard style. If this seemingly corner problem is not solved well, it will be seized by the traffic police on the way all day, then can the express not be damaged or lost? Therefore, the importance of terminal delivery vehicles cannot be overemphasized. In fact, the State Post Office has also attached great importance to this issue. It has sent people to Shenzhen for many times to investigate with the local postal administration department in order to come up with a proper solution. The reason why Shenzhen first came to Shenzhen is that Shenzhen was the first city that banned electric three-wheel driving. It is the national wind vane. Other big cities are also staring at Shenzhen and imitating it at any time.

After discussion, the personnel of relevant departments first put forward two alternatives: (1) to replace the electric tricycle with the electric bicycle; (2) to replace the electric tricycle with the express car with the unified logo.

After discussing these two schemes with express companies, express companies think that they are not feasible. When they replace them with electric bikes, the load is too small, and the couriers have to go back and forth to the outlets many times a day, increasing the cost of time; when they replace them with cars, the cost is too high to use. Finally, I think that only electric tricycle is the most suitable delivery tool for express delivery. Therefore, the postal administration can only consult with the traffic management department. The result of the consultation is that the electric tricycle cannot go on the road in the urban

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area, which is the principle. But in the outer suburbs, it can be properly liberalized.

8. Implement the Real Name System

After the telephone real name system, express delivery also began to implement the real name system.Users must show their ID card and register their real name to send the express.

The introduction of this provision can be said to provide a good guarantee to solve the problem of compensation for loss and damage of express mail.

In the past, users didn't need to show their identity documents or register their real names when delivering or sending express mail. It seems convenient and ensures information security. In fact, it is a green light for illegal and criminal acts through express delivery channels, and the interests of ordinary consumers are ultimately damaged.

In recent years, the illegal and criminal activities through express delivery channels have shown a high growth trend, mainly in the delivery of drugs, guns, controlled knives, psychotropic drugs and illegal cigarette products.

For example, the traditional way of drug trafficking is through land transportation. Drug dealers themselves bear the huge risk of being seized by the public security department on the way. Now, with the express channel, drug dealers only need to disguise drugs as other ordinary express mail and give them to express.In order to make more money, express companies are also constrained by the lack of detection equipment, so they do not seriously open the box for inspection, which acts as a means of transport for crime.

Now through the implementation of the real name system and the strict implementation of the open package inspection system, the express industry has drawn a clear line with the criminals, that is, to improve the image of the express so as to better serve consumers.

When express delivery enterprises lose, damage or express delivery, there is another saying: the goods sent by consumers belong to the illegal goods prohibited or limited, and the loss or damage of illegal goods cannot be compensated. A typical example is cigarettes." Tobacco monopoly law" clearly stipulates that cigarettes belong to tobacco monopoly products, and no more than two cigarettes can be mailed at a time. This regulation is mainly aimed at preventing cigarette dealers from transporting illegal cigarette products through express delivery channels and damaging the tobacco monopoly market system. However, ordinary consumers generally do not know this rule. Cigarettes purchased or delivered online often exceed the limit, and even are seized by tobacco monopoly departments. Express companies refused to pay compensation because the express was seized by the relevant departments and the articles sent by consumers were prohibited or restricted.

Now, the real name system and strict implementation of the acceptance and delivery inspection system require the express companies to perform the open package inspection of express packages, otherwise the express companies should be responsible for the problems, so that the express companies can no longer shirk their responsibility for failing to seriously perform the acceptance and delivery inspection system, but put the responsibility for sending prohibited and restricted articles on the consumers, which greatly guarantees the consumer claim right in case of loss or damage of express mail.

9. Conclusion

To sum up, as long as we take the opportunity of the 19th National Congress of the Communist Party of China and vigorously promote the standardized construction of express industry, we can solve the problem of compensation for damage and loss of express, better serve the society, people livelihood and consumers.

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Modern Electronic Technology

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